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Official Organ
Pacific American
Steamship Association

Official Organ
Shipowners Association
of the Pacific Coast

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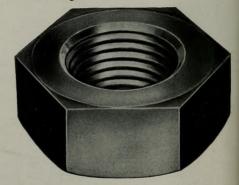


MILTON LARGE NUTS WAR-BOUND

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Standing guard in their "nests of six," 23/4" and 3" Milton-made Nuts find still another war function in holding firm the propeller shaft sections

THE MILTON MANUFACTURING CO.
Milton, Pennsylvania



Vacikic MARINE RFVIEW

An Appreciation for

THE U.S. MARITIME COMMISSION

By J. Lewis Luckenback President American Bureau of Shipping

THE EVENTFUL YEAR of 1942 has come to a close. Our country has been called upon to produce men, munitions, supplies and transportation facilities. Waterborne transportation has been utilized to a maximum and the only way to meet the extra demand and replenish the losses was to speed up shipbuilding.

The Maritime Commission, created as a result of the 1936 Merchant Marine Act, was called upon to do what seemed to be the impossible. Through the expansion of facilities and the judicious allotment of contracts, the forcefulness of the effort has borne fruit. Many ships have been builtone in as little as eight days. However, this is no criterion as it is the average of the picture which we must look at. Today, many shipyards are consistently constructing ships in 50 days and some in 40 days. I refer particularly to the Liberty ship, a ship built especially for the emergency and a ship equal to and better than the average merchant ship of the last war. Normally with rapidity of construction there would be a falling off in workmanship. Today, however, workmanship on these ships is at least the equal to, in all cases, and generally better than the product of the last

Newer yards generally have contributed most of the Liberty ships. The construction of these new yards permitted installa-

tion of heavy crane facilities, adequate subassembly areas and everything to facilitate speedy multiple construction, erection and assembly. This, coupled with the standardization, has made the program possible. Indeed, yards, the construction of which was started during this year, have already produced ships in less than 100 days. This is indeed remarkable when it is generally conceded in building a first ship, something like 250 days has been the usual time required. The average production time of new and old yards on Liberty ships today is about 50 days.

Credit must be given the Maritime Commission for the extensive program and its fulfillment, and to those men who surmounted the obstacle of time and did produce the impossible. True we have heard criticism of the program and of the ships, but when one sees the magnitude of the project and what has been accomplished, those that criticize should hang their heads, as I know of no other Government effort that has met its goal better than the Maritime Commission and the shipping

industry.

The last war saw no finished ship which was contracted for by the Shipping Board produced in the first year of our participation. A comparison-in 1919, two and one-half years after the United States entered World War I, we produced a total of

714 seagoing steel ships of five million deadweight tons and 3,374,542 gross tons. This year, one year and one month after our entry into World War II, we will produce approximately 725 ships of close to eight million deadweight tons carrying capacity and 5,300,000 gross tons, and the

ball has just begun to roll.

These figures could have been and would have been greater had more steel been available and had the facilities for the production of geared turbines been greater; also, the necessity and advisability to change types of some tonnage to meet the requirements of special ships for carrying out the war was indeed no small factor. In addition to this, building for Navy requirements has been much greater during this war than ever before, and mine layers, sweepers, patrol and auxiliary craft for special services to our armed forces are being brought out. This, I am sure, would augment the ship construction mentioned above by more than 50 per cent, so ship construction in the United States is filling its groove and backing up our armed forces, which are doing well.

American Shipbuilding in 1942

By L. H. Korndorff President, Federal S. B. & D. D. Co.

MERICAN SHIPBUILDERS are doing what seemed impossible.

Hitler's conquest of shipbuilding nations and Britain's hard-pressed position gave America the assignment of being shipbuilder to the whole world. The shipbuilding industry in America has been moribund through neglect for years. But this neglect - crippled industry has responded with another American production miracle.

Already, American yards—after a single year of war—are producing ship tonnage at a rate nearly four times greater than can be maintained by Great Britain, for generations the chief shipbuilding nation. Giving praise for American shippard production, Winston Churchill called it "an achievement far beyond even the most optimistic hopes and expectations." But that was only a beginning. Little attention has been

given the fact that we are building simultaneously: (1) an emergency fleet of slow freighters, (2) a quality fleet of passenger and freight liners to insure America a dominant place on the peacetime seas, and (3) a two-ocean Navy.

Reviewing a year of vast expansion, this U. S. Steel subsidiary has reason for pride in its achievements in the second and third categories. We do not build Liberty ships.

There are, of course, various restrictions as to what may be said now. But in the first six months of the year, Federal doubled production. That is, in the first half of 1942, the shipbuilding subsidiary of U. S. Steel delivered as many ships as in the entire year 1941.

In dollar volume, taking 1942 as a whole, we more than quadrupled our work for the Navy. Besides that, we substantially increased our production of C-2 type merchant ships for the United States Maritime

Commission.

We delivered one cruiser, many destroyers and began building three new types of

ships for the Navy.

Federal nearly doubled again, its plant and capacity by building and putting into operation the new yard at Port Newark in 1942. Naval auxiliary vessels were launched there less than nine months after

ground had been broken.

Federal's year has been marked by the launching of ships in pairs, threes, and fours. Last Armistice Day, the company carried out an octuple launching, four destroyers sliding down the ways at Kearny, while four naval auxiliaries were launched without ceremony at Port Newark. During the year Federal won the first Army and Navy "E" presented anywhere. Secretary Knox personally hoisted the pennant before a crowd of 20,000 Kearny recordmakers.

The prefabrication off the ways of large subassembly sections of ships—at which Federal pioneered as long ago as 1918—is a major factor in our ability to build more ships, faster. Thus more of the work is done off the ways; more men can work on each section built; and the ways become sort of "assembly stations." As a consequence, each shipway is occupied by any given hull under construction for a much shorter time. Thus Federal production, and the nation's production, per shipway is greatly increased.

Another major speed factor is the constantly improved and increased use of elec tric welding. All the varied parts of a ship are "sewed together" by the 6500 degree heat of the electric arc and the finally fabricated ship becomes literally a single piece of steel, strongest at the seams.

Behind such improvements in ship pro duction as these is better planning, in in finite detail, all the way from the blue print stage to delivery.

The Shipbuilding Industry

By H. Gerrish Smith

President, National Council of American Shipbuilders

HE AMERICAN SHIPbuilding industry in 1942 produced approximately 635 per cent more merchant deadweight tonnage than it did in 1941 when 1,088,497 tons were built. This past year we have built 8,000,000 deadweight tons of shipping, consisting of 750 seagoing vessels of which about 600 are of the Liberty ship type.

Naval vessels built in privately-owned vards have been delivered in six months

to a year ahead of schedule.

Elapsed time from keel laying to delivery for Liberty ships has been cut from 105 days estimated by the Maritime Commission late in 1941, to 56 days in a recent month, a saving in production time of

about 47 per cent.

Liberty ships are mostly welded and are constructed in yards designed for that purpose, permitting the prefabrication of sections weighing from 50 to 100 tons or more, which are moved into place at the building slips by gigantic cranes, many of which have been designed by shipyard engineering forces. This construction method requires the use of large areas, but it permits the industry to enjoy for the first time some of the benefits of multiple production. The noteworthy volume of deadweight tonnage produced is clear evidence that the method has virtue at a time when the need for more ships is so urgent.

Production schedules are controlled by the orderly receipt of materials and equipment from the allied marine industries, a flow that has been unusually dependable during the past year. We are now the

No. 1 customer of the steel industry. Shipyard facilities and a growing efficiency, however, have so expanded that we can now produce ships faster than certain controlling types of material can be supplied for commercial and naval vessels.

On the whole, our relations with labor have been excellent, and we are deeply conscious that labor has performed a great service. Strikes have been rare, but we are still troubled with absenteeism which continues to be unreasonably high.

Repair work on our own commercial and naval vessels as well as those of the United Nations have taxed our capacity but we have met every challenge. Two companies alone repaired over 12,000 of all types in

a recent year.

Our river and Great Lakes vards are turning out the largest ships they have ever built, the size being limited only by ability to float the craft from inland waters to the sea. Ore ships rivaling the length of our greatest battleships are now being constructed in Great Lakes shipyards for use in lake service. Wood and concrete ships and barges are also being made in considerable number.

Ninety-one concrete barges and 24 concrete ships are under construction, and

deliveries will be made soon.

A primary problem has been the inroads on shipyard labor by Selective Service and enlistments. Recent ruling to discontinue all recruitment will probably serve to ameliorate the condition somewhat.

In the meantime, we are using older men and men with physical defects. Women are being trained and are filling in the gaps in certain branches of the labor structure. Our employee-training program has been

extensive and well planned.

According to the Department of Labor, the average weekly hours in the industry are 46.8 and the average weekly earnings of per diem employees are \$58.63, a figure substantially above general industry and one which now gives us one of the most substantial industry pay rolls even at a time when all pay rolls are expanding.

Given men, materials and equipment we can and will meet the President's call for 15,000,000 deadweight tons of merchant ships in 1943. We are acutely aware of the responsibilities of this industry and the ever-increasing importance of ships-the

(Page 66, Please)



PRESIDENT ROOSEVELT AT OREGONSHIP

"You are doing a wonderful piece of work for your country and for civilization.
With the help of God we are going to see this thing through to the end."

-President Roosevelt

UNITED STATES MARITIME COMMISSION WASHINGTON

FFILE OF THE CHAIRMAN

AIR MAIL

December 10, 1944

Mr. A. J. Dickie Editor, Pacific Marine Review 500 Sansome Street San Francisco, California

Dear Mr. Dickie:

In accordance with your request of November 24, I am pleased to extend a message to the West Coast shipbuilders for the January edition of the Pacific Marine Review.

For this turpose you are at liberty to use the following:

"The prodigious achievements of West Coast shipbuilders are one of the bulwerks of the United States Maritime Commission's program. For many months they have led the Nation both in volume and speed of production.

"Their enterprise and intense effort contributed greatly to the delivery of the 8,000,000 deedweight tons of merchent ships which the President called upon the entire industry to produce in 1942. The West Coast yards alone delivered more than 3,500,000 deadweight tons, or approximately three times the output of the entire Country in 1941. Although we reached our goal last year -- and were reported to be the only major war industry to do so-we are not going to waste time telking about what we have done. The major job is still ahead. Let's do it!

*Present schedules for 1943 encompass the construction of at least 16,000,000 deadweight tons of dry cargo ships and tankers. For every Vessel built last year, we must deliver two this year. That challenge must be met. I am confident it will be met because we have reached that point in the bettle of production where, in a military sense, we can 'seize the initiative.'

"We must hold it in order to keep pace with the armed forces. This year they will be striking the enemy with gethering force on an everwidening front. More and more merchant vessels will be needed to bridge the oceans between the production lines in America and the battle lines, in Africa, Europe, Asia and Australasia.

"Our unified efforts can make 1943 a decisive year. With every atteck launched by the United Nations, let us back up our fighting forces to the hilt. Let us show the Axis powers no respite, no breathing Spell, but build an even greater Victory Fleet to service and supply our men and machines of war.

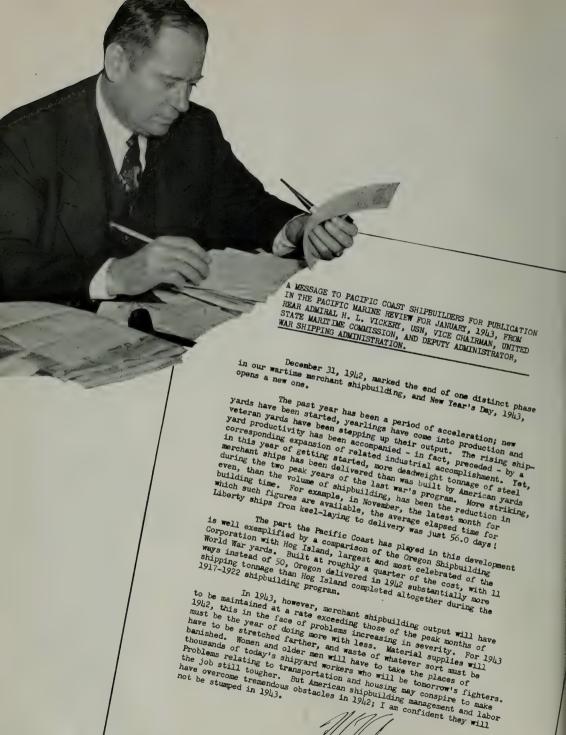
The Pacific Coast shipbuilders have exemplified the spirit with which this great task can be done.

"Let's go!"

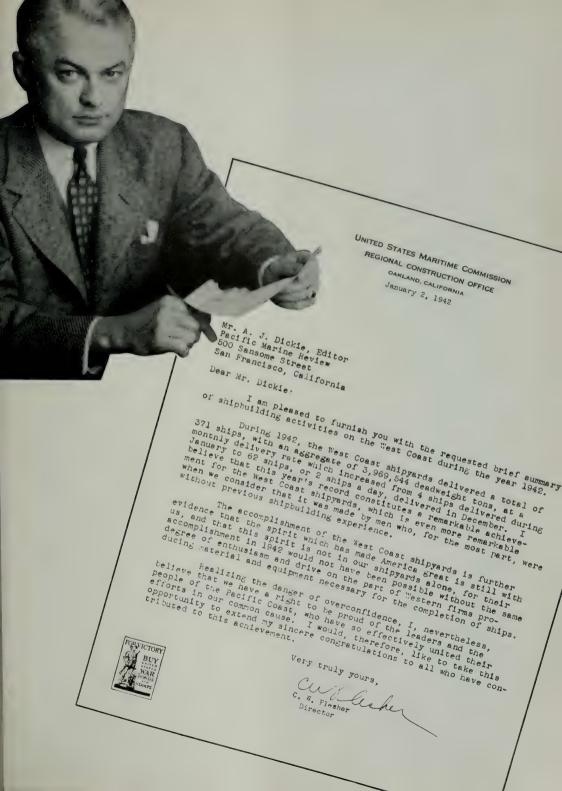
Sincerely yours,

AS Land Chairman





Commissioner



Shipbuilding Industry

(Continued from Page 61)

craft to transport, supply and defend an expeditionary force of over a million men.

We have every confidence that this great and essential industry will meet the challenges of the future and again, in every department and phase of shipbuilding, lead the world in quantity and quality.

Credit Where Credit Is Due

By Wm. M. Kennedy

Manager Ships Construction
J. A. Jones Construction Co., Inc., Wainwright Yard
Panama City, Florida

HE SOUND OF THE blow instantly tells that it is a home run when the ball, the batter and bat connects solidly. The batter struts around the bags to the plaudits of the spectators with an attitude of great accomplishment.

The bat-if it were human, would strut

and feel it had done the job.

The ball as it drops at a distant point

would say, "what a job I did."

Where is the credit due? Equally to all—it's perfect coordination of a well made perfect hickory bat, a ball with no defects

and a perfectly timed swing.

Ships and more ships are needed and more rejoicing as all shipbuilders drive on to beat what they did yesterday. This great spirit of competition is laudable, commendable and brings closer the earlier ending of this present destructive conflict. So hats off to the batter who with a perfect bat and ball makes the home run and to our men of energy and resourcefulness who produce the ships. Let's look behind the scenes to see what came before all these records of speed and this rapid output.

What do we see?

In the Maritime Commission, Washington, D. C., a group of naval architects, marine engineers, coordinators, studying layout, planning, changing, re-arranging and finally developing a vessel of simplicity.

What do these studies cover: The design of a vessel to carry a maximum cargo and use the least amount of materials. A vessel to use standard or stock materials.

A vessel to use standard equipment and machinery.

A cargo vessel to load maximum tonnage at no sacrifice in form.

A form of vessel to obtain speed, fine lines and construction simplicity.

What resulted?

A vessel of beautiful appearance.

A vessel that carries, if not the greatest—closely approaching the greatest amount of cargo for its dimension and weight.

A vessel whose power plant is standard, simple and can be manufactured by any shop with machinery.

A vessel whose machinery is simple and easy to install.

A vessel that lends itself to rapid, simple

and easy construction.

No ship was ever devised with a stern frame, rudder or hawse pipe so easily manufactured or installed.

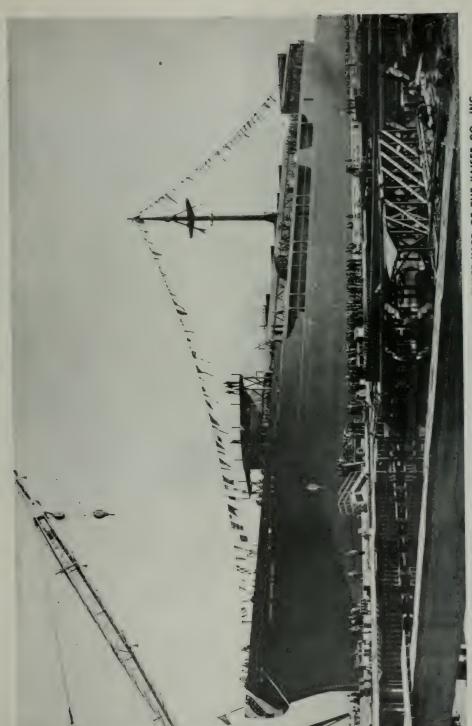
No ship was ever designed which lends itself so perfectly to preassembly work in large sections.

And it doesn't stop there—

There is a spirit of helpfulness, cooperation, distribution of information, guidance and aid for each concern building the Liberty ships from the Commission in Washington and its regional offices. The inspectors are practical and cooperative, striving to help and aid, to give advice and experience gained in other yards.

Many suggested changes, some small, some of extensive scope, are accepted by the Commission. These suggestions tend to obtain greater speed, economy, use less material or produce better parts, more ship comfort or better operation. This openminded policy means more speed. Each suggestion is studied promptly and answered immediately — no three or four days—it is wire or telephone. No outsider can realize the results of this open-minded attitude.

Sure the shipbuilders are building them fast. Now looking behind the curtain, the reason is exposed. It is coordination, creation and cooperation. A major portion of results are due to the facts outlined. Let's not forget those not in the lime light, and when the records are written include those who made it possible. The Maritime Commission — its directing heads, engineers, naval architects, regional office staffs, inspection divisions, procurement, progress, material divisions and all connected with the project.



MARITIME COMMISSION TYPE C-4 BUILDING AT RICHMOND NUMBER THREE YARD OF THE KAISER CO., INC.



MARITIME COMMISSION TYPE V2-ME-AL TUG BUILDING AT BIRCHFIELD BOILER WORKS, TACOMA



MARITIME COMMISSION TYPE C-3 CARGO VESSEL BUILDING AT WESTERN PIPE & STEEL COMPANY YARD, SOUTH SAN FRANCISCO



MARITIME COMMISSION TYPE N3-S-AL CARGO COASTER BUILDING AT PACIFIC BRIDGE COMPANY, ALAMEDA, CALIF.



MARITIME COMMISSION C1-BT TYPE CARGO CARRIER BUILDING AT CONSOLIDATED STEEL COMPANY YARD AT WILMINGTON, CALIF.



MARITIME COMMISSION TANKER BUILDING AT PORTLAND YARD OF THE KAISER COMPANY, INC.

HIGH LIGHTS

of

NINETEEN FORTY-TWO

for

PACIFIC COAST SHIPYARDS Working for

U. S. MARITIME COMMISSION

In the following pages, Pacific Marine Review presents in picture and text a review of the accomplishments of the larger Pacific Coast ship-yards building ships for the U. S. Maritime Commission. There is an even larger program of shipbuilding on the West Coast for the U. S. Navy and other Federal agencies but it is under a stronger censorship and so we do not touch upon it.

1 4



U. S. MARITIME

ESTABLISHES REGIONAL

UR COVER FOR

A LIBERTY CARGO STEAMER
DROPS ANCHOR

SHIPYARD WORKERS WATCH
HYDRAULIC RAM TAKE OUT DOG SHORE



this issue is an emblematic design representing Admiral Emory S. Land, Chairman of the U.S. Maritime Commission in the guise of Vasco Nuñez de Balboa rediscovering the Pacific. This would be a rather fanciful conception were it not for the fact that the U. S. Maritime Commission has in reality rediscovered the Pacific Coast as a shipbuilding locale without peer in America. The yards built on this Coast by the Commission and managed by Pacific Coast executives are making records never before approached in shipbuilding history.

Our purpose in this issue is to record a few of the high lights of 1942 for Pacific Coast shipbuilders producing merchant ships for the U. S. Maritime Commission, and to show what this tremendous production means to the business and industrial life of the Pacific Coast. So great was the impact of Pacific Coast shipbuilding energy on the headquarters of the Commission at Washington that the Commission soon saw the futility of trying to supervise all of this energy from such a great distance. They therefore, early in 1942, decided to establish Regional divisions in charge of construction, one of which should be on the Bay of San Francisco.

From the viewpoint of the Pa-

commission

CONSTRUCTION OFFICE

cific Coast shipbuilder, the outstanding "High Light" of 1942 was this decision of the Maritime Commission to decentralize its Construction Division, and the consequent establishment of a regional office in Oakland, California, practically at the geographical center of the Maritime Commission shipbuilding program on the West Coast.

This establishment is known as the West Coast Regional Construction Office of the U. S. Maritime Commission, and is located in the Financial Center Building in downtown Oakland. Under its jurisdiction, Pacific Coast yards are able to get prompt personal contact with authority, settle their problems and get immediate decision on many questions that formerly had to go to Washington.

In fact, this office almost at once became a potent and constructive force operating under and through the Pacific Coast shipyard schedules to expedite the delivery of materials and equipment necessary for the building and delivery of ships and to cut red tape in the prompt decision of administrative and financial problems.

Under wise and practical administration of Carl W. Flesher, Director, this West Coast Office was organized for a real job of constructive supervision of the entire Maritime Commission program in this district, not only for inspection and trial trip supervision, but for all fiscal matters, personnel problems, labor agreements, public relations, material procurement, and equipment manufacture.



WELDERS working on preassembly of shaft alley

With this set-up, any Pacific Coast shipbuilder could get an authoritative answer to most of his problems within 48 hours, and to many of them just by putting in a telephone call.

The mere knowledge that such a condition existed has acted like a tonic on the executives of West Coast yards and through them on

LIBERTY SHIPS BY PACIFIC COAST YARDS

			Ships	Tonnage
Yard	Keels	Launchings	Delivered	Delivered
California Shipbuilding Corp	. 111	111	109	1,177,200
Oregon Shipbuilding Corp	. 108	108	113	1,330,400
Richmond Number Two	. 72	65	63	680,400
Richmond Number One	. 53	53	55	594,000
Marinship Corp.	. 12	7	5	54,000
Vancouver		3	2	21,600
	_			
Totals	_ 366	347	347	3,747,600



THIS WITCH CAULDRON SCENE shows welders working on the hub of a turbine rotor.

A LIBERTY OUTFITTING DOCK SCENE AT NIGHT



During the year, there were 347 launchings and 366 keel layings

for Liberty ships. In the standard long-term program, there were 146 keel layings and 117 launch-

The table herewith shows the record of the Pacific Coast yards building Liberty steamers.

the working personnel, and this has resulted in an exhibit of record-breaking performances unequaled in this or any other nation.

At the beginning of 1942, there had been one delivery of a Liberty ship from a Pacific Coast shipyard and there were three shipyards building Libertys and one building Victory ships for Britain. Neither of the three shipyards was completed in its present form by January 1, 1942, and yet those three yards have produced in 1942 over 280 Liberty ships.

In addition to these: the big Vancouver yard turned in several Liberty ships before it switched to Naval mystery ships; the Marin Shipbuilding Company was just getting into production on Liberty ships when it was switched to tankers; and Richmond Number One, having finished its British contract in July, was taken over by the Maritime Commission and is now delivering Liberty vessels at as fast a rate per way as any of the big yards. In fact, Richmond Number One and Richmond Number Two are practically one yard.

The record of the Maritime Commission shipyards on the Pacific Coast for 1942 shows 371 ships delivered, with a total deadweight capacity tonnage of 3,969,-544 long tons. These figures represent 47 per cent of the total goal of 8,000,000 tons set by President Roosevelt for the shipyards of the nation in 1942.

Broken down into types, we find that 347 of the ships delivered were Liberty steamers, with a total deadweight capacity tonnage of 3,747,600 long tons, and 24 were standard long-term program vessels, with a total deadweight capacity tonnage of 221,944 tons.

Oregon Shipbuilding Corporation delivered a Liberty ship in less than 14 days from keel laying, which was some ten days shorter than the shortest previous period. Hardly had the furor about this world's record subsided when Richmond Number Two went at ter a record and came through with a Liberty in less than eight days, and, in fact, had her fully loaded and on her way in convoy within 14 days of keel laying.

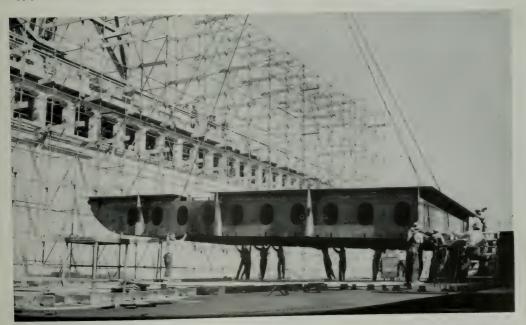
These were spectacular stunts. However, in June, California Ship building Corporation delivered 15. In October the same yard delivered 13, laid keels for 13, and launched 13. In December Calship delivered 16 and has set a quota of at least 15 a month de-

livered in 1943.

The four yards on the Pacific Coast now engaged exclusively in the construction of Liberty ships delivered 44 ships in November and 48 in December. This approximates a rate equal to 600 Liberty ships a year out of four shipyards, and is a little better than one ship per way per month. If everything in the far-flung lines of material supply and equipment delivery



LIFTING AND SPOTTING a 62-ton section of double bottom completed on preassembly racks.





TESTING THE STEERING GEAR

PREASSEMBLY is a great technique in modern ship production. Here we show a Liberty ready to launch, and in the foreground the piled parts of the next ship.



clicks 100 per cent, the yards may beat that schedule by a considerable margin. However, their present records seem to prove that they will deliver approximately 50 ships per month, and that is going some.

In these vards there is no waste motion even over launchings. The writer was at Oregon Shipbuilding Corporation recently talking with John McGregor, the superintendent of riveting, just after the noon whistle. The superintendent looked at his watch. "While we are talking," he said, "we might as well see the launch." We walked over to the head of the ways. The director of public relations was starting his launch program. Five minutes and twenty seconds later the ship was in the water. John McGregor looked at his watch again. "Humph," said he, "that's another record. Ten seconds faster than the average of the last ten ships."

Aside from the launching crew



AN ENGINEER at the electric switchboard of a Liberty steamer.

and the sponsors party, to obtain the yard seemed to be payed any attention to the launching, which was the 107th from the yard in a little over a year's time.

With Henry J. Kaiser and his organization pulling, the Maritime Commission and its organization pushing, and the small nucleus skilled shipbuilders laying out the work and showing the way, the great multitude of trainees is doing a very commendable job of shipbuilding. These trainees are doing considerable thinking about this job and much of the speed achieved is due to suggestions from the men and women who are doing the job.

But none of these records would be possible were it not for the open-minded attitude of the West Coast Regional Construction Office administrators who are willing to approve of experimental work that promises to produce ways of cutting down man hours and expediting production.

> LIBERTY CARGO STEAMER, as shown here, just after launching at a California shipyard, has good lines, capacious hulls, and ample cargo handling gear.

ONCE MORE the operating marine engineers are learning to use the psi indicator and to figure the diagram using the old formula of

> 2 PLAN 33,000

to get the indicated hp of their engine cylinders.







THESE VESSELS are furnished with simple, modern comfort. Here we show the stateroom of the chief engineer. With a private bath adjoining and ample room, these quarters are very acceptable to American seafarers.

MOORE DRY DOCK COMPANY

THE PIONEER PACIFIC YARD IN NEW SHIPBUILDING TECHNIQUE

SHIPBUILDING is an old story on the Pacific Coast. Yards of this district were tops in every national crisis since Civil War days. This fact has been somewhat dimmed in long perspective by the flood of national publicity spot light turned on the wonderful record of production achieved by the "Liberty" shipvards.

In order that we may get back into proper perspective and be able to appreciate fully present schedules for ships, Pacific Marine Review presents first in its Pacific Maritime Commission Shipyard High Lights for 1942 a pair of pictures and a statement concerning the beginning of the Maritime Commission program of shipbuilding on San Francisco Bay in 1939. To get these pictures and facts, we go to the yard of the Moore Dry Dock Company.

Let no reader suppose that this yard had no "High Lights" in 1942. On the contrary, we find this plant one of the busiest of shipbuilding and ship repair establishments. However, we want to record here our conviction that the development work undertaken at this yard underlies and makes possible the splendid production records of Pacific Coast "Liberty" yards.

For this reason, we place Moore's first in this roll of Pacific Coast Maritime Commission shipyards and we believe that the following facts justify this position. The yard of the Moore Dry Dock Company on the Oakland Estuary is the oldest Pacific-Coast-owned steel shipbuilding and repair plant.

When World War I broke out, Moore's yard was a well established shipbuilding and repair plant and it immediately began to expand to take care of the increasing demand for ships. It was here that seven ships were launched off seven ways in less than an hour. When the shipbuilding slump and the depressions came along, Moore's specialized on ship repairs, general engineering work, and structural steel fabrication.

In 1938 this yard secured from the U. S. Maritime Commission a contract to build four C-3 type cargo liners with modern 450-psi, geared-turbine power plants—the first Maritime Commission contract granted to a Pacific Coast yard.

There had been much doubt expressed by the Atlantic Coast experts over the ability of Pacific Coast shipbuilders and engineers to produce such ships and install such machinery. Moore's tackled the problems with characteristic energy and some rather amazing developments followed.

One large shipbuilding way was built with ample welding space on both sides and on the inshore end, and with several large, high, whirley type cranes, each of 50 (fifty)ton capacity.

Draftsmen laid out sections of the vessel for preassembly. Welding arrangements were made with the California inventor of the Unionmelt welding system to aid in the application to modern shipbuilding technique of the then new Unionmelt welding machines. Sections of the hull, weighing as much as 60 tons, were assembled on the welding racks; picked up and turned over by the cranes; and spotted in the hull on the

By the spring of 1939, this system was in full operation and a new technique in shipbuilding born on the Pacific Coast.

When the dock and sea trials of the first of these vessels had been successfully run and the results shown were as good or better than those produced in any Atlantic Coast yard, it was a triumphant vindication of the ability of Pacific Coast shipbuilders to build and equip modern high-pressure, fast cargo steamers equal to vessels of the same type built anywhere in the world.

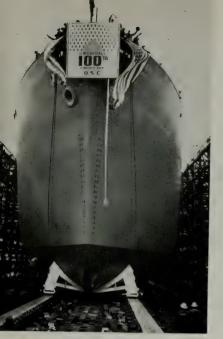
The Moore Dry Dock Company pioneered all the present great shipbuilding program of the Pacific Coast. It is now specializing on C-2 Cargo ships and holds contracts for large numbers of these vessels. This yard is also one of the major repair and reconditioning plants on the Pacific. Vessels are of all types and sizes, are drydocked for inspection, painted, repaired, and reconditioned with efficiency and dispatch. An average of better than two ships a day are handled by the repair division.

RIGHT: Tank top plating assembly for a C-3 freighter, being welded on the welding racks by the Unionmelt system automatic welding machine. Picture taken May 18, 1939. Note the smooth, uniform weld made in one pass by this machine.

BELOW: Section of double bottom, weight approximately 42 tons with all floors and intercostals in place, being placed in position on bottom plating of Hull No. 195, C-3 type freighter under construction for the United States Maritime Commission by the Moore Dry Dock Company, Oakland, California, April 28, 1939.







OREGONSHIP'S 100th LIBERTY, Geo. W. Goethals, down the ways on December 2, 1942.

REGON SHIP-building Corporation, the big ship-yard built by the Maritime Commission on the north bank of the Willamette River near St. Johns, Portland, Oregon, during 1942 has set a pace in shipbuilding that shipbuilders would not have believed possible a few years back. Delivering its first vessel on December 31, 1941, Oregonship before December 31, 1942, had delivered 112 Liberty steamers to the U. S. Maritime Commission.

Oregonship claims to be the first shipyard in America on four counts:

First to use assembly line methods:

First to receive the United States Maritime Commission Award of Merit;

First to receive the Navy "E" award; and

First to employ women workers on ship construction,

To pick out a high light for 1942 in a yard that has delivered 100 cargo steamers in less than a year and is currently delivering at the rate of 13 per month is not easy.

The officials at Oregonship mention three high lights:

Maritime Day, May 22, 1942;

Launching of the 10-day ship and visit of President Roosevelt, on September 23, 1942; and

The delivery of the G. W. Goethals, 100th ship, on December 2, 1942.

On Maritime Day, during the space of 17 hours, Oregonship:

Launched three 10,000 dwtcapacity Liberty steamers, which were christened respectively, Washington Irving, James Fenimore Cooper, and Thomas Bailey Aldrich: peared at Portland. The President of the United States, on a more or less secret tour of inspection of war production plants, witnessed this launching and was very much pleased to hear of the record. Said he to the management:

"You are doing a wonderful piece of work for your country and for civilization. With the help of God, we are going to see this thing through to the end."

That was a great day, a real "high light" at Oregonship.

Then on December 2nd came delivery of the Geo. W. Goethals, 100th Liberty cargo steamer since the Star of Oregon, less than

OREGONSHIP BUILDS

Delivered three Liberty steamers, the Samuel Moody, the John Sevier, and the Jonathan Edwards; and

Laid keels for three Liberty steamers.

The three vessels delivered at that time were respectively, 71 days, 65 days, and 60 days from delivery. Speaking at the Maritime Day dinner, New York, in relation to this performance. Admiral Vickery declared, "Today in rapid succession, three world records have been shattered. To the workers and management of the Oregon Shipbuilding Corporation, I send congratulations and the thanks of a grateful nation." Of the three vessels launched on that day, the last had been on the ways only 36 days, then considered a record.

On September 23, Oregonship launched the Joseph N. Teal ten days after keel laying and delivered her complete three days, 23½ hours later, thereby creating a world's record that was to stand for nearly eight weeks as a world's record in ship erection and outfitting. On that day, it happened that a distinguished visitor ap-

twelve months before. More than a million deadweight tons of capacity in ships' holds coming out of one shipyard in one year. Never before in the history of shipbuilding had such a record been made. Records, however, are made only to be broken, and so many had been made and broken at Oregonship in 1942 that this one hardly received any attention. The outfitting superintendent, Al Abraham. received on behalf of the employees of the outfitting dock a vegetable-floral lucky horseshoe tribute, as shown in our illustration.

The boys and girls at Oregonship are just turning them out 3 a week or more. The launchings are at noon; the programmed time is now five minutes and a few seconds from start of program till the hull is afloat. A few of the newer workmen may step over to see her slide off. Aside from the launching crew, the director of publicity, and the sponsor's party, no one is much interested. It has gotten to be routine.

Oregonship has a small nucleus of fine old-time shipbuilders who have adopted the new technique



PRESIDENT SEES LAUNCHING

PRESIDENT ROOSEVELT, on his secret tour of war industries, witnessed the launching of Oregonship's ten-day Liberty, Joseph N. Teal, on September 23. With him in the official car, are, left to right, Chares A. Sprague, Governor of Oregon; Henry J. Kaiser; Edgar F. Kaiser, general manager of Oregonship.

MORE SHIPS

and have trained many in the old skills. She has also a very fine organization for keeping up the flow of materials, machinery and equipment. And so she turns out the ships at the present average from keel laying to delivery in 43 days, or less. And the goal for 1943 is 15 ships a month.



VEGETABLE - FLORAL HORSESHOE was officially received by Al Abraham in behalf of the boys on the outfitting dock who put on the finishing touches to Oregonship's 100th vessel.



THE TEN-DAY LIBERTY, Joseph N. Teal, broke into headlines all over the nation on the day of its launching, September 23. Above, right: sliding down the ways. Bottom: view showing the President and his party watching the record ship hit the waters of the Willamette.



CROWD ASSEMBLED TO SEE . . .



TANKER S.S. SCHENECTADY CHRISTENED . . .



AND SLIDE DOWN THE WAYS.

Swan Island

THE PORTLAND YARD OF KAISER COMPANY INC.

HE SWAN ISLAND yard of the Kaiser Company was designed and built for the production of large tankers. The site is on an island in the Willamette River, just down stream from Portland. Here ground was broken late in March, 1942, and a modern yard for the erection and equipment of these big steel tankers was built and equipped in record time.

The yard is just getting into production and the administration of the plant consider that their high light for 1942 is the first launching of a tanker hull, which took place on October 24.

This hull was christened Schen-

ectady by Mrs. Alexander Bruce McEachern, who was attended by her mother, Mrs. Herbert D. Brachen as matron of honor, and by her 41/2-year-old son John Alexander McEachern as flower bearer. The program, which was scheduled for and put through in 27 minutes, contained an address by Harry Corbett, chairman of the Port of Portland; an address by Fred L. Peterson, acting Mayor of the City of Portland; an address by Charles A. Sprague, Governor of the State of Oregon; an invocation by a Presbyterian minister; and two selections by the Portland Air Base Band.

The ship slid down the ways

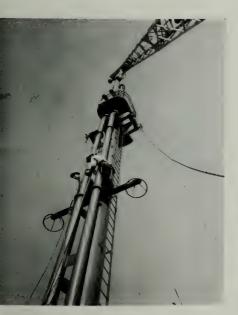
into the Willamette with flags flying amid the cheers of thousands of workmen and their friends.

The hull had been 115 days on the ways and the date of the launch was just seven months from the date of breaking ground. This is a very excellent record for a new yard on vessels of the great size of these tankers. With an overall length of 523 feet and a rated full-load displacement of 21,670 tons, these hulls are something far different from the Liberty cargo steamers. Each tanker has a cargo capacity for 138,000 barrels of oil, and for the heating of this cargo, its loading and discharge, and the handling of ship's



SWAN ISLAND'S FIRST SPONSOR

SPONSOR OF THE SCHENECTADY (right), Mrs. Alexander Bruce McEachern, and mother Mrs. Herbert Brachen, matron of honor, and sponsor's son, who acted as flower boy.



WHIRLEY CRANE drops mast into position on Swan Island's 1st tanker.

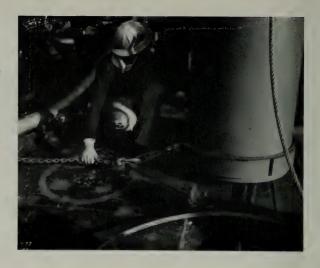
fuel, steam, water, and various other services, some 70,000 feet of piping has to be installed.

The propulsion power will be of the turbo-electric type. Highpressure steam boilers deliver steam to a turbine driving an electric generator which in turn delivers power to a motor driving the single screw.

The speed and efficiency which characterized both the construction of the yard facilities and the building of hulls at Swan Island are tributes to the ability and the energy of the executives who have trained inexperienced workers to do a real job of shipbuilding under adverse circumstances. Especial credit is due to A. R. Nieman, assistant general manager, and Elmer Hann, yard superintendent, for their magnificent and untiring labor in developing the yard and speeding construction on the ways.

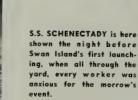
SAILORS' SUPERSTITION

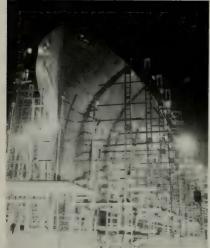
THE RIGGERS at Swan Island revived the old sailors' superstition of nickels and coppers under the mast to assure the 5.5. Schenectady good luck.



THE HUGE PROPELLER and the rudder of the S.S. Schenectady are caught in this unusual photo, which shows their massive size as compared with the men in the background.







Vancouver Yard

OF KAISER COMPANY INC. VERSATILE SHIP ASSEMBLERS

HE KAISER COMPANY yard at Vancouver, Washington, is in many respects an ideal Liberty cargo steamer construction plant. In its design were included all features dictated by experience at Oregon Shipbuilding Corporation. The site comprises over 300 acres on the Columbia River. This site was laid out by the engineering talent of the Kaiser Company, Inc. and the designing engineers of the Maritime Commission to make it the last word in the great ship construction plants centering around the standard Liberty ship. The outfitting dock is over 3000 feet long; in addition there is an outfitting basin with two huge gantry cranes spanning it, which were designed for the purpose of handling very heavy subassemblies of deck erections up to the entire midship deck house of a Liberty ship.

Work was started on this site about the middle of January, 1942. At the head of the ways is a vast area of open and roofed preassembly platforms and buildings. Back of these are fabricated storage, then the plate shop, then plate storage. All of this is arranged so that the material flows through without reversal or change of direction.

Every type of material handling device adaptable to shipyard work

is provided in great abundance from hand trucks to the great hammerhead crane, which domi nates plate storage, and the two traveling 125-ton gantries that span the outfitting basin.

This yard had been allocated a large number of Libertys and was ready to lay the first keel 85 days after ground breaking. Eighty days later, on the 4th of July, this first hull was launched and was christened S.S. George Vancouver after the famous British navigator, for whom Fort Vancouver was named. A second Liberty ship was finished, but before the third keel had been laid, the yard was switched over to the production of a "mystery ship," an invasion barge or Navy tank lander.

These vessels are entirely different from the Liberty freighters, but Vancouver yard personnel tackled the job with enthusiasm and soon had the new job under control. The first hull of this series was 95 days on the ways. By September they were being launched in 33 days. Then came a world record.

In a driving rainstorm at 10:01 a.m., October 14, a keel was laid for one of these ships and with no let-up in the storm, she was launched at 11:31 p. m. October 16, just 71½ hours on the ways.

Because of the Navy censorship,

very little publicity has been given this yard. It is, however, one of the largest and most elaborately equipped yards on the Pacific Coast, and in the straight production of Liberty ships would probably be a record-breaker in 1943.

The first allotment of mystery ships are all in the water, and the ways are being kept busy by erecting eight of the Libertys assigned to Oregon Shipbuilding Corporation. During January the program calls for change to another type of naval auxiliary vessel.

Vancouver is employing some 23,000 persons; expects to employ over 50,000 when the new building program gets up to maximum in the spring.

Tremendous housing projects are resulting from the rather isolated location of this yard. One of these, Vanport, will be the second largest city in Oregon. Located on 640 acres of land near the Oregon terminal of the Interstate Bridge across the Columbia River, this project, now practically complete, includes 9280 units of one to four rooms each, which will house upwards of 40,000 people. There will be 179 utility buildings, two schools for 4000 pupils, a recreation center, a hospital, four shopping districts, and numerous playgrounds.

Calship ...

DELIVERS LIBERTY STEAMERS ONE EVERY FORTY-SIX HOURS

ERMINAL ISLAND, Los Angeles Harbor, is a long sand spit separated from the mainland by Cerritos Channel. There have always been boatbuilding yards and shipyards here even before the sprawling metropolis that is now Los Angeles decided to have a sea outlet and become a world port.

During World War I, there were several large shipyards on the island, one of which survived and became the Bethlehem yard at the San Pedro end of the island. Here in the spring of 1941, Bechtel-McCone and Parsons began

breaking ground for a shipyard for the U. S. Maritime Commission, and here on May 24, 1941, they laid the keel of their first Liberty steamer. This yard was named the California Shipbuilding Corporation, or Calship for short.

The first contract for ships was speedily followed by others, and the yard was expanded until it shared with one other Liberty shipyard the distinction of being the largest shipyard in America devoted exclusively to building that type of steamer. The other yard is not now building Libertys exclusively, so that today Calship

may claim to be the largest Liberty shipyard in the United States.

The first ship from this yard was launched on September 27, 1941, before a tremendous crowd of people. She was christened John C. Fremont. After her launching came the problems of outfitting. Machine shops all over the country were manufacturing equipment for these ships. Marine installation mechanics were practically not in existance. But these handicaps were gradually overcome and on February 21, just 273 days after her keel had been laid, the John C. Fremont was deliv-



PRESENTED WITH A MODEL of S.S. John Bidwell, 109th ship delivered by Calship during 1942, and 16th during December, 1942, President Roosevelt declares it to be the "finest model I have seen." Left to right, standing are Rear Admiral Howard Vickery, Jack Adams, publicity director for Calship; Graham Spickard, Calship representative at Washington, D. C., and John A. McCone, executive vice-president of Calship.

PACIFIC MARINE REVIEW



CALSHIP CELEBRATES 100th LAUNCHING

BENJAMIN IDE WHEELER, 100th Liberty launched from Calship's ways, is seen in the top row going down the ways and afloat after the event. Between them is the sponsor, Mrs. Robert Gordon Sproule, wife of the president of the University of California. She is shown swinging the bottle of 100-year-old champagne (center row, left), and again with christening party (bottom row, left). The participants are, left to right, second row: Ralph Parsons, Bechtel-McCone-Parsons; Dr. Gordon S. Watkins, Dean of Lefters, U.C.L.A.; S. D. Bechtel, president of Calship; Carl W. Flesher, Regional Director, U. S. M. C.; and John McCone, executive vice president of Calship. The ladies holding the flowers are Mrs. P. K. Yost (left) and Mrs. Sproule. Center row, right: The U.C.L.A. quartette entertaining the crowd, part of which is shown in view directly below listening to J. H. Wadsworth, industrial relations manager of Calship.



WILLIS ROYAL PORTER, 1000th PUPIL to graduate from the Pipe Fitting School at Calship recently, was presented by Chief Instructor Ted Warne a gaily beribboned "diploma," a specially burnished 2-inch pipe — the first to be threaded in class by Mr. Porter. More than 20,000 Calshippers have upgraded themselves by attending one of the 45 courses in which 3800 workers are enrolled at all times.

ered to the Maritime Commission.

Since that event, there has come from the ways of this great yard a constantly increasing stream of Liberty ships, until by Christmas Day, one year after the first delivery, the California Shipbuilding Corporation had delivered 104 vessels to the U. S. Maritime Commission.

At this yard, no emphasis has been placed on single ships, but a constant pressure has been maintained to accelerate the tempo of steady production. As a consequence of this policy, Calship in June, 1942, broke all records by delivering 15 steamers in that 30day month. Every month since, with one exception, this yard has maintained the lead over all Liberty shipyards in the United States. The current rate is 13 ships delivered, 13 hulls launched, and 13 keels laid each month. As of January 1, 1943, this rate will be increased to 15 per month.

There are no very striking high lights in such a program. However, a considerable flood light was thrown on the launching and delivery of Hull No. 100, christened Benjamin Ide Wheeler.

This hull was launched November 27 and delivered December 17. She was named for the late great president of the University of California, and was sponsored by Mrs. Robert Gordon Sproule, wife of the present president of that institution.

As we go to press, Calship has suddenly sprung another month's record by delivering 16 ships, launching 15 ships, and laying keels for 15 ships all in the month of December. Starting early on December 27, they launched five, delivered five, and laid keels for five before midnight of the 31st. That is really pushing them off

and on in a hurry.

When the John C. Fremont successfully passed her sea trials by the U. S. Maritime Commission, the traditional broom was hoisted to her masthead, signifying that she had made a clean sweep.

Into the handle of this broom a notch is cut by the Superintendent of the Outfitting Department every time a ship is delivered. That handle now looks like a huge file.

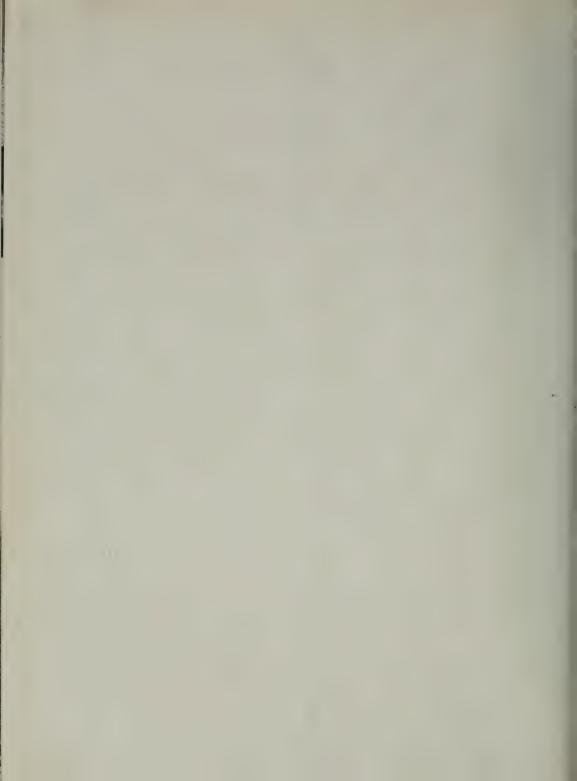
Say the Calshippers:

"1942 has gone and now it's 1943, and we're all set to step out and smash a few more records. The President of the United States asked for 1.100,000 tons of merchant shipping in 1941. We gave it to him. He asked for 8,-000,000 tons in 1942 and once again we came through. His request is for 15,000,000 tons in 1943, and we don't have to ask each other if he will get it; we know he will! We're setting our sights here at Calship for at least 15 ships launched and delivered, each and every month of 1943. Every other day of the month will find a ship sliding down the ways and a ship heading out of the outfitting docks for service with Uncle Sam. There's out first goal, and of course we will make it. Achievement of that goal will mean 180 ships in 1943. Sixteen ships a month will mean 192 ships. Let whoever wishes set the goal, Calshippers will reach it!"



A CALSHIP LIBERTY, one of over a hundred that are now in service carrying much-needed supplies for the armed services and the United Nations.







HODGSON-GREENE-HALDEMAN

MRS. FRANK W. HODGSON christens one of several vessels recently delivered to the Army by Hodgson-Greene-Haldeman, shipbuilders.

A MODERN WOOD SHIPBUILDING YARD

of Hull J-399 in Long Beach Harbor created no great stir in shipbuilding circles. This event did, however, mean a lot to over 500 men at Hodgson-Greene-Haldeman, Shipbuilders.

The appearance of Lieut. Col. Henry E. Beal of the U. S. Army as speaker signified the fulfillment of one contract and the beginning of another — recognition of this rapidly expanding yard—soon to be one of the largest wooden boat builders in the country.

This yard, fairly bristling with activity, has grown from a 50-foot frontage six months ago to 850 feet of frontage today. While the plant is far from completion, it boasts a lumber yard and mill; a joiner shop; machine shop; electrical shop; welding and blacksmith shops; mold loft; two launching ways; and an outfitting dock.

Three different types of vessels are now under construction for the U. S. Army and the Maritime Commission. Some are ocean-going tugs; others are surprisingly large barges.

Frank W. Hodgson, partner and general superintendent, comes

of a shipbuilding family — his father before him built ships— and for many years Mr. Hodgson and his father worked together in ship construction, both in the Pacific Northwest and in Alaska. Also, Mr. Hodgson was master mechanic in Alaska's largest copper mine, and has been master of many fishing ships.

Burch Greene and Henry Haldeman were in the automobile business (the world's largest Chrysler business) at the outbreak of the war. They had developed a splendid and capable organization, which had worked well together over a period of five years. They had plenty of capital, a record of good business administration, and a desire to get into war work.

Mr. Hodgson was looking for some capital which would enable him to get into Government construction, when a mutual acquaintance, who knew of Greene and Haldeman's desire to get into war work, introduced them. They tackled the job of "getting together" with such speed and energy that, within two weeks from the date of their meeting, a partnership agreement was signed,

and in less than a month, Government contracts were on the books of the new firm.

Of particular interest in this new shipyard is the way the age-old craft of building wooden boats is being modernized. Cranes, lumber carriers, pneumatic tools of all kinds, and a modern mill, move and process the huge timbers as they flow through the various operations incident to making them a part of one of the hulls under construction.

In the mill, a planer, over 80 feet long, smoothes and finishes to proper dimension timbers of giant size. A huge saw, one of the largest in the country, cuts the large timbers into the proper shapes for frame members. In another part of the yard these frame members are prefabricated into a massive frame, then picked up from the framing platform by a mobile crane and placed in their proper position on the keel.

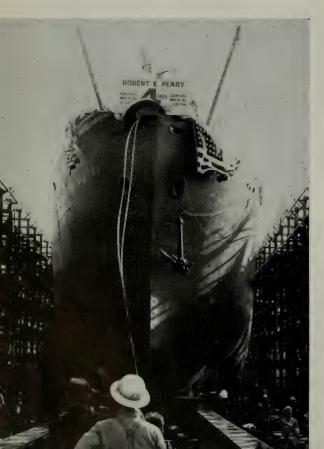
Hulls for large and small craft may be seen well under way on dry land. Later on, house movers edge the completed hull over into place on the launching ways. Outfitting docks are built along the channel for the outfitting of oceangoing tugs after they are launched.

The Hodgson-Greene-Haldeman Shipbuilders are making an important contribution to wooden boat building in bringing modern methods into this ancient craft.



TWENTY-FOUR hours after keel laying Hull 440 is shaping up.

RICHMOND NUMBER TWO SETS WORLD RECORD



RECORD-BREAKING LAUNCHING

WORLD'S

The S. S. Robert E. Peary (Hull 440) slides down the ways 4 days, 15 hours, 26 minutes after keel laying.

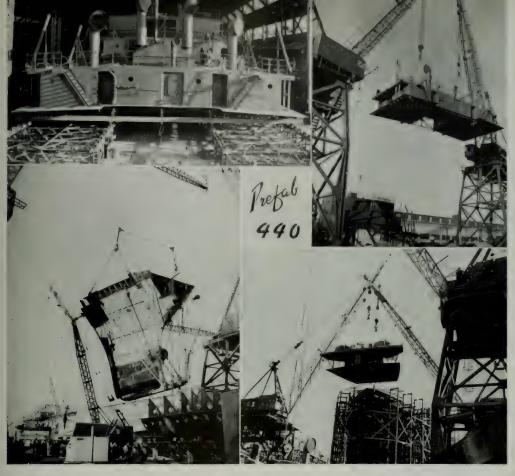
E HIGH LIGHT of 1942 in Richmond Number Two shipyard occurred at 2:30 p. m. on Sunday, the 15th of November, when the Robert E. Peary, an EC-2 Liberty cargo steamer, was completely ready for delivery to the U.S. Maritime Commission. Just a little over a week previous to that date, at 12:01 a. m., Sunday, the 8th of November, the first section of the outer bottom for this big freighter was laid in place on the blocks of Shipbuilding Way No. 1, and Hull No. 440 was started.

On Thursday, the 12th of November, at 3:30 p. m., Hull No. 440 was christened Robert E. Peary, and was launched 91 per cent complete. She was ready for delivery two days and 23 hours later after having had a six-hour dock trial.

This record will probably stand for many years as the ultimate triumph of streamlined shipbuilding as now practiced in the Liberty shipyards. The preassembly techniques and very clever planning made it possible to have the ship 61 per cent complete in subassemblies before erection started on the ways. Ninety-seven lifts by the cranes finished the hull.

Richmond Number Two and Richmond Number One are practically one yard. Number One was built originally to take care of a program of 30 Victory ships for the British Government. When the program was completed in July 1942, the U.S. Maritime Commission took over the yard, and since that time, it has worked exclusively on Liberty ships. Counting the British ships delivered during the early part of 1942, the two yards, now practically one, have delivered 118 vessels to the cause of Victory.

A feature of these Richmond yards is the huge preassembly shop, or Pre-Fab, as it is called in the yards. Here complete deck houses are assembled and finished to the last detail of equipment, furnishings and surface coatings. The complete deck erection is in four sections, each of which is transported to the hull and erected thereon as a unit. The largest of these units weighs 84 tons.



PREASSEMBLY is an art at Richmondship, and the timing worked out in advance on prefabrication kept the assembly of Hull 440 moving according to schedule. The deck house (upper left) is completed in the prefab shop and then moved by sections (upper right) to the building ways. Lower left: the after peak assembly is ready to be placed into position on the hull. Lower right: Lifting after deck house assembly to place on deck.

A DECK SECTION (left) is lifted up by two huge cranes and brought into place (right) where workers are ready to secure it in position. (November 10, 1942.)





Marinship

THE NEWEST

ARINSHIP CORPORA-Sausalito, California, claims a record-breaking performance in the completion of a new shipyard and the delivery of five Liberty ships therefrom all in the short space of nine months from groundbreaking on the site.

The original Liberty ship contract called for delivery of three steamers by December 31, 1942.

Several six-way Liberty shipyards were established along the Atlantic Coast at approximately the same time as the contract was let for Marinship. None of these other yards had delivered a ship by the end of 1942.

Marinship Corporation is the joint effort of W. A. Bechtel Co.; Bechtel, McCone, Parsons Corporation; Raymond Concrete Pile Company; J. H. Pomeroy & Co., Inc.; Morrison - Knudsen Company, Inc.; and McDonald & Kahn, Inc. The last two firms and the W. A. Bechtel Co. were three of the noted "Six Companies," which constructed Boulder Dam.

On July 27, just after laying the third Liberty keel, Marinship received the announcement from the Maritime Commission that the yard was to build only 15 Liberty steamers and was then to be changed to tankers.

On September 25 a contract was awarded the yard calling for delivery during 1943 of 22 large tankers of the T-2 type. Keel for the first of these tankers was laid December 7, on the anniversary of Pearl Harbor, and weeks ahead of schedule.

Marinship is proud of its record for keeping ahead of schedules. Keel for the S.S. William Richardson, first Liberty launched at the yard, was laid June 27, approximatey a week ahead of schedule. She was launched nine days before the estimated date, and delivered in October, 51 days before contract date. This fine steamer was handed over to the Maritime Commission just 217 days from the date of breaking ground for the new yard.



LOOKING ACROSS THE YARD AT THE SIX SHIPWAYS

Corporation

SHIPYARD PACIFIC COAST





MRS. EARL WARREN (above), wife of the newly-elected Governor of California, swings a husky right to the nose of a new Liberty. The Governor (left) takes a hand at welding. Below: The high-level outfitting dock is a unique feature at Marinship. Equipped with tool shops and other facilities, it saves many man-hours.





THE CRANE IS ONE OF THE PRINCIPAL TOOLS of a modern shipyard. Above: A crane handles the stern post. Below: Two cranes spot on the hull a section of the main deck house.



The steamer Thomas Hart Benson, launched on December 20, was 96 per cent complete at the time of launching.

The newest of the big Pacific Coast Liberty shipyards, Marinship has benefited by the experience of other yards and represents the latest word in facilities, layout, and organization for speedy and efficient shipbuilding. Fabrication and preassembly methods are here used to the Nth degree. The present employment is approximately 19,000 in three shifts. Several hundred women work at the crafts of welding, burning, drafting, etc. Special crews of women welders under the guidance of leaderwomen work on subassemblies in the huge plate and assembly shops.

Marinship will deliver three more in January, and thereafter seven more Libertys in quick succession. In the meantime, work is going ahead on the big tankers, and all work at Marinship is always ahead of schedule.

PACIFIC BRIDGE COMPANY

BUILDS "COASTERS" IN WET BASINS

HE PACIFIC Bridge Company owns a yard in Alameda, California, and holds a contract from the U. S. Maritime Commission for building small coastwise steamers. They build these ships in a long basin fitted with a caisson gate arranged to allow water into the basin through valves in the gate, thereby floating both the gate and the ship.

This basin is spanned by travelling cranes, and the shops and yard are arranged for the most efficient movement of materials. The yard holds two records for construction of this type vessel in this manner.

Two hulls were completed ready for launching in 22 days.

One hull, built by itself in the basin that ordinarily accommodates two hulls, was completed ready for launching in 3 days and 8 hours, or 80 hours from keel laying to launching. In making this record, some 480 shipfitters, welders, burners, flangers, riggers, and all types of shipyard workers turned in exceptional performances in production.



THIS "COASTER" is getting afloat by the waters flooding into the basin at Pacific Bridge yard and will soon be hauled out to the outfitting dock.

This ship was christened Samuel Very.

So far as we know, this is the shortest time spent on the ways, or in the basin, by any ship yet built.



THE "COASTERS" at Pacific Bridge Co. were built two at a time in a large basin. Here we show the tank top and a bulkhead of one of these ships under construction.



Richmond Number Three THE C-4 YARD

PLATE AND ANGLE shop of Number Three seen through the legs of a big Whirley crane in the storage yard.

Number Three, the 125-acre ship erection plant of the Kaiser Company, Inc., is built in a more permanent fashion than the other Richmond shipyards. Instead of shipbuilding ways of timber construction supported on wooden piling, Number Three has deep basins hewn largely out of rock

and lined with reinforced con-

The entire layout and equipment is designed for the speedy and efficient assembly of the Maritime Commission type C-4 and its machinery and equipment.

The "High Light" of this yard for the year 1942 was the launching, or rather floating of the first C-4 built in the United States. This vessel was christened General George O. Squier by Sponsor Mary Anne Somervell, attended by Maid of Honor Mary Louise Wartmann, and Flower Girl Irene Freitas.

Presiding at the ceremonies was the inimitable impresario Kay Kyser, who introduced all the speakers and functionaries, and whose band provided the musical program.

Clay Bedford, general manager of the Richmond shipyards, and Carl Flesher, Regional Director for the U. S. Maritime Commission, each spoke briefly. Major General Frederick Gilbreath was the principal speaker, and Chaplain Robert McDonald offered the invocation.

The hull built in Basin Two was christened from a platform spanning the basin, and the great ship General George O. Squier was towed slowly out into the bay to the strains of "Anchors Aweigh."

She floated off the blocks on an even keel at 12 feet draft.

The C-4 is a standard long-term U. S. Maritime Commission design, approximately 1000 tons displacement larger than the C-3 and considerably faster. All the vessels of this type are now being built as armed auxiliaries for troop carriers.

Richmond Number Three will be turning out these big combination carriers in record time and so hastening the hour of Victory for the Allied Nations.

THE PROUD PROW of General George O. Squier flaunts the Stars and Stripes as she floats out of the basin.

PACIFIC MARINE REVIEW



GENERAL VIEW of welding racks between building basins and plate shop.

PART of plate shop and plate storage yard.

INTERIOR
of pipe shop,
featuring
mock-up of a
couple of engine room
piping systems.

Consolidated Builds C-1





S.S. CAPE ROMAIN gets its champagne christening from a charming South American "neighbor," Her Excellency, Marta ide de Rios.







OVE, THE STIRRING
TES of the Chilean Na-nal Anthem are played by the band as S.S. CAPE ROMAIN speeds down the way.

THE WIFE OF THE PRESIDENT of Chile graciously auto-graphs a letter for Charles Singleton, electrician, who helped build the ship she had just christened.

BELOW, SENORA DE RIOS WAITS FOR HER CUE.





Jinx Falkenburg, famous model and motion picture actress, shown talking with Gen. Paul W. Baade

From Penstocks

To Motorships

WESTERN PIPE AND STEEL PIONEER ALL-WELDED DIESEL-DRIVE CARGO VESSELS

ESTERN PIPE & Steel Company at South San Francisco is unique among San Francisco Bay shipyards in that it employs the sidewise method of launching and launches into a basin connected to deep water in the bay by a long dredged channel. As has been frequently stated, the layout of this yard, including the channel, bears a striking resemblance to a machine gun.

Western Pipe & Steel late in 1940 secured a contract from the Maritime Commission to build five C-1-B cargo motorships and elected to make them completely welded hulls, thus becoming the first yard on San Francisco Bay to build completely welded, large ocean-going vessels.

The last vessel of this contract was delivered early in 1942, the yard meantime having begun work on a U. S. M. C. contract for a number of C-3 type cargo steamers. These ships, as they approach-



AN UNUSUAL VIEW OF A SIDE LAUNCHING showing the ship settling in the basin, and the formation of the unexpected secondary wave, which usually succeeds in soaking some spectators.

ed completion, were taken over by the Navy, and Western Pipe and Steel Co. was given a contract for their conversion to various naval uses.

Since publication of any details on this naval work is taboo by the censor, we have chosen the completion of the C-1-B contract as the high light of the year for this firm, and illustrate this with a page of pictures showing the building of one of these hulls from the keel laying to launching and a picture of the completed vessel coming back from her sea trials with a broom at the masthead.

The C-1-B motorships built here passed all tests and are giving very good service in the war effort of the United Nations.



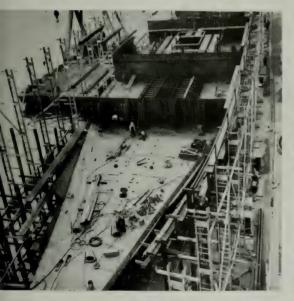
C-1-B CARGO MOTOR-SHIP American Manufacturer coming home from her sea trial and passing under the Bay Bridge wih a broom at her mast head.



The last keel plate (stern) being lowered into place.



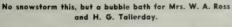
Prefabricated section of double-bottom (a 20-ton lift) on its way.

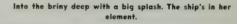


Lower hold bulkheads and engine foundation appear in this progress shot.



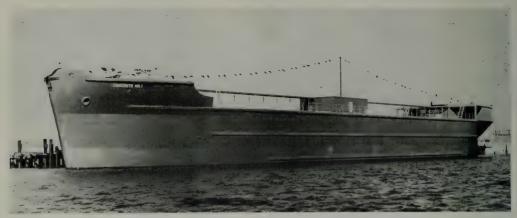
High, high, up she rises. That's the main deck you're looking at.











PROFILE OF CONCRETE No. 1 AFLOAT AT THE OUTFITTING DOCK

CONCRETE SHIP CONSTRUCTORS

BUILD FIRST CONCRETE OIL BARGE FOR U. S. M. C.

HIS LOS ANGELES firm was organized late in 1941 through a combination of the Tavares Construction Company and Elliot, Stroud and Seabrook. A site for a shipyard was chosen at National City, San Diego Bay, and work on yard facilities started in January, 1942. Keel for the first of five concrete barges was laid May 1, and this vessel was floated from her basin on October 15. Three vessels have been floated to date. In the meantime, another contract has been allotted by the Maritime Commission, giving the yard a long run of shipbuilding.

This yard is the first concrete yard to function since the last war and the first to launch a concrete ship in the present program. It has met and overcome many problems and the following account of some of these difficulties, together with the illustrations, may be helpful to other concrete shipbuilders in America.

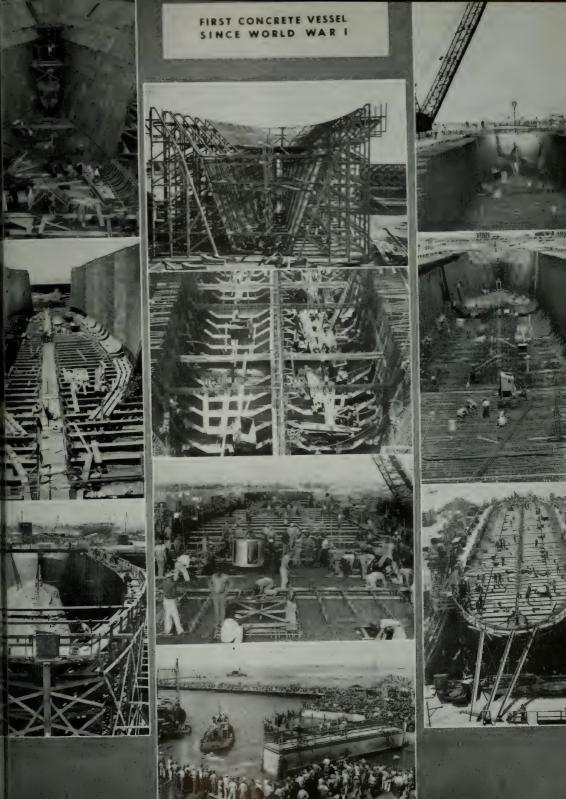
Certain longitudinal members in the reinforcing "mat" of the shell are required by the American Bureau to be continuous from stem to stern. As the deformed

round bars used in the reinforcing of the shell cannot be manufactured or shipped in single full length sections, it becomes necessarv to weld the standard lengths together in units of 360 feet and over. In using a butt welding machine for this purpose, it was found that, although the welds were good to all appearances, they would not pass the bend tests required by the American Bureau. Cutting the weld square across and etching the surfaces revealed the presence of foreign material, evidently scale, which adhered to the butted surfaces and prevented proper fusion of the joint. This was finally overcome by the simple procedure of bringing the butt ends together, applying the current and immediately separating the butt ends slightly. This caused a heavy flashing between the butted surfaces which threw out all scale and foreign material. After a few seconds of flashing the butts are drawn together and complete fusion results. Butts flash-welded in this manner can be bent consistently far beyond the requirements of the Bureau.

In pouring large vertical slabs, such as the sides of the shell, bulk-heads and division walls, it has been found that if too great a depth is poured at one time, a separation of material results with larger and heavier parts of the aggregate sinking to the bottom and lighter material floating at the top. To overcome this and obtain a homogenous structure, it is the required practice to pour in lifts of not more than eighteen inches. As soon as the lift has commenced to set, the next lift above is

FACING PAGE

PROGRESSION VIEWS of he building of a concrete vessel. Left column, upper: stern form with plywood lining before being set in building dock; (center) plywood keel forms and side forms being erected: (bottom) hull form completed with some of bottom reinforcing steel in pace. Middle column: These views show various forms and the pouring of concrete. The bottom view shows the opening of caisson gate preparatory to launching. Right column: These views shows interior being prepared for building up the concrete strengtheners until, in the bottom view, the deck is ready to be poured.







MRS. CARLOS TAVARES shristens Concrete No. 1 from a platform suspended by a crane:

FIRST TWO
CONCRETE oil
barges afloat
at outfitting
dock. Wooden
pilot house being built on one
is the only
wooden deck
structure.

with the concrete brings about a swelling in drying, to overcome the natural shrinkage. In vertical slabs it appears to be the best practice to pour the reconstructed area up to within about two inches of the top, and, as soon as the patch has set, to dry pack the top two inches. This results in a solid patch without shrinkage cracks. The question of when to patch a slight weeping and when to leave it alone is a matter for an expert in concrete to determine, and should be left to the inspector in charge. It is found that leaks below a certain volume will take up of themselves due to the phenomena of efflorescence wherein the limes and alkalis component in the cement seep into the crack and harden on contact with the atmosphere. The experience of an expert is required to determine whether efflorescence will cure a slight leakage or whether it is best to patch.

poured, which procedure is followed until the complete slab is poured. It is apparent that this requires a nicety of timing and an uninterrupted schedule of pouring.

Patching of leaks has caused a lot of headaches and the solution is far from the simple proposition it might appear to be. The bugaboo of shrinkage is ever present to prevent watertightness. When a leak is found in a tank under test, it becomes necessary to locate the source and this is sometimes found at some distance from the point of egress. It is essential to cut away a section of varying size right through the shell, exposing the reinforcing steel, and re-pour a patch to cover the removed section. Incidentally the word "patching" is frowned on in favor of the term "reconstruction." In reconstructing such areas, the filling material is prone to shrink as it dries and leave a crack all around in flat slabs or along the top edge in vertical slabs. This is overcome to a great extent with the use of "Tricosol," or similar agent, which when mixed in proper proportion

CONCRETE SHIP FORM in basin with reinforcing bars passing through the buttwelder before being led through the stern post approve into the hull.



Belair Shipyard

OF BARRETT AND HILP IS POURING CONCRETE BARGES

SOMEONE HAS said of the tug and barge:

"They may not be as beautiful and graceful as a yacht, but they'll move a heap of freight from where it is to where it's not."

That is the service which justifies the construction of 26 concrete ships at the Barrett and Hilp Belair Shipyards in South San Francisco.

But, when these vessels go into coastwise trade for the Americas, they will relieve many cargo vessels which are needed so urgently to carry food and supplies to the armed forces of the United States scattered all over the face of the earth.

"We used to have a slogan that we would build anything from a doghouse to an office building," says Harry Hilp, one of the principals of the firm of general contractors. "Then we expanded into bridges and dams. Now we're taking on ships. History will furnish the doghouses for Schickelgruber and his gangsters."

In just a few short but very busy months, Barrett and Hilp have transformed acres of marsh and a sizable hill into an active shipyard, designed and built to create great ship-shaped concrete barges.

All phases of activity are so coordinated and operations are so timed that production will resemble that of a well-organized assembly line. Studied layout has placed the concrete mixing plant, the mold loft, the lumber stock piles, and other facilities where they will keep construction going in all seven of the huge basins.

First there was the facilities contract covering the grading

down of a hill, the dredging of channels and the blasting and excavating of the seven construction basins. General grading ran 500, 000 cubic yards, and a total of 210,000 yards of marsh mud and blue rock were blasted and excavated from the 400-foot basins. Blasting required 8000 pounds of powder per pit.

Six of the basins are to be used for the actual, concrete construction, while the seventh will be a finishing and outfitting dock. Each ship will have quarters for a crew of 10 men, and the equipment will include pumps, generators, towing equipment, diesel engines for the anchor windlass and other facilities.

Propulsion power will be furnished by ocean-going tugs and the ship shape of the vessels will lower resistance to a point where one tug can tow three of the barges.

Scientists and laboratories have been at work to improve materials and methods just as practice and equipment were being modernized and made more efficient in all branches of the construction industry.

From knowledge and experience have come new skills and technique, new materials and machines. Concrete aggregates have been developed and discovered that give less weight, more strength and greater density than was possible with sand and stone. Such qualifications meet the requirements of concrete ships, so the United States Maritime Commission has let contracts for such vessels.

Instead of following the orthodox procedure of shipbuilding, Barrett and Hilp evolved a plan better suited to the problem in hand. An outstanding feature of their layout is the building basins excavated below the level of San Francisco Bay. These basins make for economy of form construction and eliminate the hazard of ways and of sliding the concrete hulls off into the water.

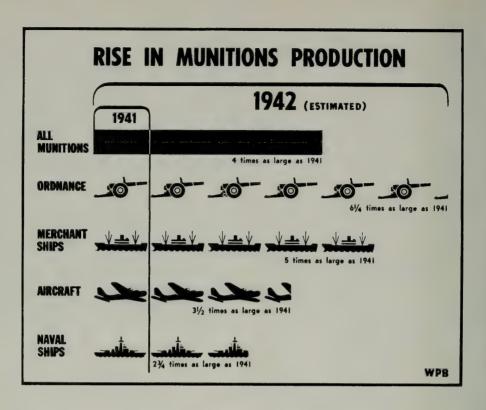
Floating gates at the bay end of each basin keep them dry until a barge is completed. Then they will be opened to admit water from the bay, and the barge floats out normally. Gates will then be closed, the basin pumped dry, and another barge built.

Plywood is being used for the face of the forms. Outside forms are supported by and attached to scaffolding which rests on skids. After the final set of the concrete, these forms are slid back from the ship several feet to give workmen room to do the final finishing on the outside surface of the hull.

Steel reinforcing rods will form a closely-spaced, welded network in the shell, bottom, bulkheads and deck of these craft. The longitudinal rods in the bottom of the hull will be welded to make continuous members approximately 350 feet long. Air-driven vibrators will be used to settle the concrete and eliminate all voids, thus making a dense mass closely adhering to the steel reinforcements.

Templates will be employed to make the inside forms for the hull, the bulkheads, decks, ribs and other structural details. All the capacity of the ten holds will be available for cargo.

First concrete was scheduled for pouring about January 15, and within 60 days from that date, the entire shipyard is scheduled for full-swing operation.



WAR OUTPUT-1942

Airplanes	49,000
Tanks, and self-propelled artillery	32, 000
Anti-aircraft guns (20 mm. and over)	
Merchant ships (deadweight tons)	

(Figures announced Dec. 7 by the Office of War Information)

WAR FINANCE

(Cumulations are from June 1940)

Authorized war program as of Nov. 30, 1941	\$64,000,000,000
Authorized war program as of Nov. 30, 1942	238, 000, 000, 000
Expenditures as of Nov. 30, 1941	13, 800, 000, 000
Expenditures as of Nov. 30, 1942	
Daily rate of expenditure in November 1941	
Daily rate of expenditure in November 1942	244, 500, 000

MANPOWER

War	workers	December	1941	6, 900, 000
War	workers	December	1942	17, 500, 000

PACIFIC COAST MANUFACTURERS

PRODUCE

MACHINERY . . . EQUIPMENT

and

OUTFITTING ITEMS

for

PACIFIC COAST SHIPBUILDERS

.

It would be impractical to even list the names of all the machine shops, copper shops, brass shops, foundries, fabricators, riggers, paint manufacturers, cabinet makers, instrument makers, and other tradesmen who, as subcontractors or vendors, supply the many items of equipment and machinery that go to make up complete shipyards and the ships they build. We present in the following pages a few of the Pacific Coast enterprises that play a large part in making possible the marvelous shipbuilding records on this coast.

Production Lines

FOR 2500 H. P. MARINE ENGINES

HEN THE STORY is written of how job shop production was converted to production en masse, the story of Charles E. Moore and his Joshua Hendy Iron Works will form one of the brightest chapters.

On one of the giant craneways in the sixty-acre Hendy Plant, this slogan appears: "The difficult job can be done immediately; the impossible job may take a little longer" and by this credo, Charley Moore lives, moves and has his being. Through example, he secures

a like adherance on the part of every employee, regardless of the particular job. As a result, the plant flies the Maritime Commission's "M" flag and the Army-Navy "E" flag, while employees proudly wear their "E's."

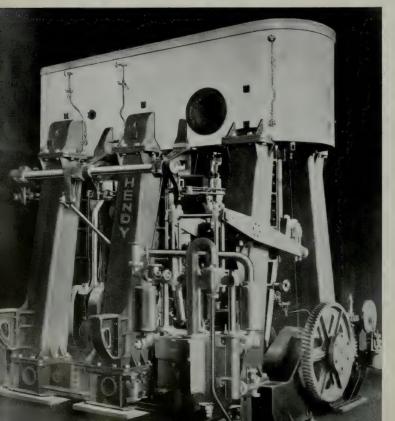
Initially assigned the task, by the Maritime Commission, of building 2500-hp triple-expansion steam engines for EC-2 freighters, the idea of producing these 271,-000-pound monsters by mass production methods, instead of as individual jobs, did not cause the turn of a hair on Charley Moore's head. Starting with the purchase of the Joshua Hendy Iron Works, which was established in Sunnyvale, California, in 1856, he has put into war production the type and kind of plant facilities and organization that is truly one of the miracles of World War II.

This plant, originally built to turn out mining equipment in the early days of this century, had progressed to the point where it was able to turn out a small number of these same big marine engines during the entire course of World War I. Now, the plant, expanded to cover more than sixty acres of ground, is averaging between eight and ten of these engines a week, and production it going up.

In achieving engine production to keep pace with ship launchings on the West Coast, there developed a number of bottlenecks in other types of necessary ship fit tings and equipment, particularly in the line of steam turbines, pumps, motors and electrical con-



(1) President Charles E. Moore of Joshua Hendy Iron Works receives the award from Brigadier General R. L Denig at Sunnyvale on October 8. (2) The Hendy Turbine Plant, which will shortly be turning out turbines. (3) The Hendy band is the chief attraction for the Saturday noontime rallies. (4) A section of the crowd present at the award ceremony. (5) Pouring time in the foundry. The 120,000 sq. ft. foundry will be in operation this month. (6) Women workers are an innovation at the plant. The attractive, comfortable jump suits bear neat blue and gold Hendy emblems on pockets and caps.



PACIFIC MARINE REVIEW



trol. Regardless of how good a ship's hull and engine may be and how quickly it may have been constructed, that ship cannot enter the service of supplying our Navy, Marine, and Air Force stationed all over the globe until all the other accoutrements have been designed, manufactured and installed with the same precision and speed as were the hull and the engine

The Maritime Commission recognized this fact and again called on Charley Moore, who jumped into the breach, this time purchasing the fifty-five year old Crocker-Wheeler Electric Manufacturing Company of Ampere, New Jersey. This concern, one of the oldest and best-known names in the electrical industry, already engaged in the production of motors and control equipment for the war effort, is to be greatly expanded under the management of A. J. M. Baker, a former co-worker of Mr. Moore's, when both of them were assisting in the Lend-Lease program.

Mr. Baker was Deputy Director General of the British Purchasing Commission and Chief of the Machine Tool Division, while Mr. Moore served as expert advisor to the United States Government in the allocation of machine tools. Prior to his Government association, Mr. Baker was the chief engineer of Willys-Overland, and, before that, chief engineer of the Cincinnati Milling Machine Company. Through acquirement of Crocker-Wheeler Electric Manufacturing Company, Hendy expanded their line from steam engines and steam turbines to turbogenerators, motors and other electrical equipment.

This still did not meet the urge in the mind of Charley Moore to break existing bottlenecks in shipbuilding, so he gathered into the fold the Pomona Pump Co., of Pomona, California, and St. Louis, Missouri, along with its subsidiary, Westco Pump Division. Pomona, over a period of 40 years, and Westco, during the past 25 years, have built up an enviable record of successful application of their pumps in many industrial

usages, as well as in agriculture, municipalities and marine service. Both were possessed of huge backlogs of orders for pumps for war service, but Charley Moore needed, and therefore procured, the Pomona organization and its "know how" in the design, manufacture and application of a wide range of types and kinds of pumps.

George A. McKenna, president, chief owner and guiding genius of the Pomona Pump Co. since 1924, together with the entire executive personnel, has been retained intact by Moore. In addition to the plants in Pomona and St. Louis, an entirely new 25-acre plant located at Torrance, California, and perfectly equipped for the manufacture of pumps has been purchased and turned over to Pomona Pump Co., Division of the Joshua Hendy Iron Works.

By these purchases, consolidations and acquirement of manufacturing and operating organizations, Hendy has made sure that when its engines, regardless of the number produced a month, go into a like number of hulls, there will be no undue delay in quickly commissioning them for service. The design and manufacture of most of the critical items required now rests securely in the hands of capable Charley Moore, while behind him is a trained organization who, through long years of experience, have acquired the knowledge and the ability to produce to meet the need, not only of the moment, but of the future, as well.

The Hendy organization now owns and operates not only the sixty-acre factory site at Sunnyvale, California, covered with buildings filled with equipment, but the big Pomona Plant in Pomona, its two plants in St. Louis, the Crocker-Wheeler Plant at Ampere, New Jersey, and new plants at Torrance and Long Beach, California. From all of these plants is already pouring daily a steady stream of marine engines, steam turbines, turbogenerators, motors, pumps and other equipment and ship fittings, in order to satisfy the increasingly great demand by the Martime Commission for more and more cargo space.

THE COLUMBIAN ROPE CALENDAR

"CONVOY," by Charles Robert Patterson.

The Columbian Rope Company calendar for 1943, in a spirited painting by the well-known American marine artist, portrays a group of merchant ships at sea convoyed by destroyers and planes. Attached to the calendar is this explanatory text.

"In William Falconer's Marine Dictionary, published in London in 1776, is found the following definition:

"'Convoy, a fleet or navy of merchant ships bound on a voyage to some port of general rendezvous. Convoy also implies the ship or ships appointed to conduct and defend them on their passage thither.'

"While the contrast between the types of craft used on convoy duty today is very great as compared with the old lumbering sailing vessels of Falconer's day, the principle involved is the same, namely, the escorting of merchant ships across the oceans by armed naval vessels, planes, etc.

"In World War I, the convoy system helped to beat the submarine menace and aided tremendously in bringing ultimate victory for the Allies. In the present war, convoys have reached new heights of efficiency, great fleets of merchantmen shepherded across the seas of the world, by destroyers, cruisers, and even battleships, while overhead airplanes keep a lookout for submarines and other hazards.

"After the war, there will be innumerable actual stories from the convoy services that will surpass the wildest tales of fiction, stories of incredible bravery and hardship in the face of the death ever present in the skies above and the waters beneath."

ASSEMBLY LINE FOR

LIBERTY LIFEBOATS

A PLANT IN KOKOMO, Indiana, where once gas and electric ranges were built, is now filled with row upon row of big all-steel lifeboats in the process of construction.

A 650-foot motorized assembly line, moving at 32 feet per hour, holds 39 lifeboats in the process of assembly at any one time. Every 48 minutes one of these boats, 22 feet long, weighing a ton and a half, with capacity for 31 persons, moves off the line onto the shipping platform. Every other boat is equipped with a motor, and can be used to tow the boats not so equipped.

This remarkable production schedule achieved by Globe American, is of a pattern with the amazing performance of the entire shipbuilding industry. "When we first started building these boats in December of last year," says Alden P. Chester, vice president and general manager, "we were fortunate if we turned out two a day. That is nothing to be wondered at, when you consider that most of our men, living here, a thousand miles from the sea, had never seen a lifeboat. Today, we are turning out 20 completely equipped boats every day."

The equipment in these lifeboats is interesting and has undergone something of an evolution in the past year, as pointed out by Mr. Chester, "Where we first equipped these boats with only one quart of water for each person, we now have 11 quarts per person. The emergency rations have been changed, also. Where once lifeboats were

equipped with hardtack and condensed milk, they now have scientifically prepared dehydrated foods of known caloric and vitamin content. Such emergency rations take up the least amount of space with the maximum of food and life-sustaining value." All boats are shipped complete with all the latest equipment required for emergency use by all occupants, including mast and sails, signal flags, oars, compass, firstaid equipment, and other supplies, all stowed in watertight compartments or lashed in place to prevent their loss in event the boat is capsized.

The lifeboat built by Globe American was originally designed by their engineers and was accepted by the Maritime Commission.

MANY GON-DOLAS with four lifeboats each make up the daily lifeboat shipment from Kokomo, Indiana.



Steering Gears

ON A PRODUCTION LINE

AST-MOVING assembly lines, specialized to each type of marine machinery included in its output, translate into speed-with-precision production at the Webster-Brinkley Company, Seattle, Washington.

The steam steering engine assembly line calls for building up the engine in a step-by-step procedure which makes for the all-essential speed as well as efficiency. This is the first time that modern production methods have been applied to the making of steam steering gear—previously made one at a time.

A double rail track runs through the shop, and the engine is on skids provided with wheels for operation on this track. This arrangement makes for ready movement of the heavy unit, as well as making for ready adjustability to various working heights. Heavy duty parts prevail throughout the steam steering set-up—for instance, the completed cylinder block weighs 985 pounds—the pinion and worm gear, 882 pounds.

The first step is to put the cleaned and painted sole plate on skids, then to set in the bed plate. Feeding from two side assemblies, the main bearings for the main shaft are installed, then the bearings and the main shaft fitted together.

Crankshaft assembly is handled in a sub. Fitting eccentric and crank pins, and crank pin discs, also fitting of eccentric straps are handled in the same subassembly.

Placing bronze bushing for pinion worm is done at this time, and after columns and forward columns installed, as well as the center bearing that connects the two after columns together. Further build-up is the placement of the cylinder block on top. Pistons and covers are removed from assembly block cylinders, and line rod inserted which lines up the crank shaft with the cylinders. A Starett indicator is used for the precision job of achieving alignment, and a Starett micrometer applied as a distance gage.

The cylinder block arrived at the cylinder sub assembly in the form of an intricate iron casting comprising bores for two cylinders, one control valve and two cylinder valves, together with parts connected, all in one block. The assembly of valves, pistons, rods, covers, stuffing boxes, travel-blocks and guard blocks is handled in a side phase of this subassembly, and this assembly is placed in position after the liners have been pressed in. Asbestos lagging is applied under the jacket of the cylinder block which is put on as a final step in this sub opera-

Returning to the main line operation, the oil system is next in line. This includes installation of the oil pump and pipe lines extending to all running parts of the engine.

Approaching the stages of final buildup, the installation of the

worm wheel rings, pinion, and worm wheel disc takes place at this point on the line, then the installation of the connecting rod to crank pins and crosshead pin, as well as the adjustment of the guide plates. Still other phases of final assembly call for installation of the eccentric rods to cylinder valve stem, installation of control valve and gear, placement of telemotor control shaft and lock pin for emergency hand control.

The steam testing station is the final point on the production line of the steam steering gear, with facilities for running-in six engines simultaneously. Running tests of at least eight hours are made under steam, to assure that all parts of the unit are properly adjusted.

Similar line production technique is applied to other types of marine machinery at Webster-Brinkley, with the assembly line kept busy the clock around by a flow of parts from sub-contractors. The company maintains a completely equipped pilot machine shop, which produces working models and makes preliminary runs on all parts before they are let out on sub-contract. With this set-up, Webster-Brinkley Company becomes primarily an engineering and assembly plant which can focus attention on design, engineering, and expedition of assembly for shipment.

George Gunn, Jr., president, and T. J. Bannan, vice president, are co-owners of this company.



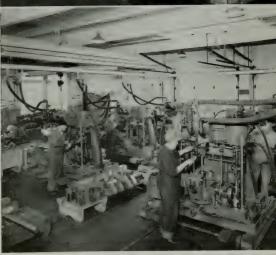
UPPER LEFT: The laboratory figures in the close control maintained in the gray iron foundry at Webster-Brinkley. Harry W. Dietert Co, equipment is used in this lab. A Riehle Brinnel hardness testing machine is a new instrument included in the laboratory layout.

UPPER RIGHT: The Webster-Brinkley gray iron foundry is now concentrating much of its output on heavy-duty castings for the steam steering gear line. This view shows the Pangborn sand blast equipment which expedites production.

CENTER LEFT: A series of subassemblies feeds the main production line. Here the cylinder block arrives at the cylinder subassembly in the form of an intricate iron casting comprising bores for two cylinders, one control valve and two cylinder valves.

CENTER RIGHT: Close-up of steam steering gear under test.

LOWER RIGHT: Dramatic finish of Webster-Brinkley steam steering gear production line, where facilities are provided for running in six of the massive gear simultaneously. Tests are continued for an 8-hour period.





THESE PARTS for steam steering engines, made by Western Gear Works in Seattle, are shown in various stages of completion.

HENEVER WESTern Gear Works' people in Seattle read of another Liberty ship sliding down the ways, whether it be in the Pacific or Atlantic, it is with pride and a feeling of accomplishment, for these ships are steered by engines equipped with gears and parts made in their Seattle plant.

News stories of ship launchings are inclined to be like the report of the glories of a star halfback, with little or no mention made of the other ten players. Well deserved praise has been given to shipbuilders for their accomplishments - while generally overlooked are the builders of subassemblies and parts. Due to the

nature of the work, machine time required and shortage of skilled machinists, "hurry-up" methods cannot be applied as readily as to general heavy assembly and construction work.

It was against such obstacles that Western Gear Works, already engaged in a production of gears and gear machinery for the Navy and Army, accepted contracts for steering gear parts, pistons, piston rods, connecting rods, engine worm shafts, bronze ring gears, cylinder control valves, liners and plugs.

Setting up for production on eight new items in the midst of an already busy shop requires skilled planning. New tools were neces-

sary, new patterns, new dies, and new jigs were set up. A special machine was built for cutting the worm drive. Research work and testing of all parts was carried out by Western Gear engineers. With the finest type of cooperation received from all departments-engineering, planning, expediting and purchasing suppliers, and with the assistance of skilled shop men the job got under way in record time. That a contract of such size could be put into production and successfully carried on in the midst of an already unprecedented volume of work speaks well for the ingenuity and guiding ability of the Western Gear Staff.

DIRECT

NATION'S

LIBERTYS

That nearly impossible schedules have been met is proved every time the skids are greased for another Liberty. Such organizations as Western Gear help make possible the record-breaking production of Liberty ships which will put the skids under the "Axis Heels."

FINISHING operation on a steel worm drive for Liberty ship steering engine is pictured here. Worm has been previously cut on a special lathe designed by Western Gear Engineers to speed up operation.



THIS completed steam steering engine for Liberty ships contains many parts manufactured by Western Gear Works.

Colby Cranes

IN AMERICAN SHIPYARDS

THE SPEED WITH which ships are being assembled under the maritime production program is largely due to the tremendous lifting capacity at great radii of the giant traveling and revolving cranes now in operation in many of the major shipyards throughout the nation.

Among the foremost builders and designers of this important piece of war equipment is the Colby Steel and Engineering Company of Seattle, Washington. An undisclosed number of Colby revolving cranes have been placed in operation in 20 leading shipyards since January 1, 1941. While a large portion of them are in service on the Pacific Coast, Colbys are also working in the Mississippi Valley, on the Gulf of Mexico, and on the Atlantic seaboard.

In order to meet the demands of wartime construction, the lifting capacity of these cranes has been constantly increased. The latest Colby revolving crane now being built lifts 60 tons at a radius of 60 feet. This means that large hull sections and other preassembled parts can be swung into place easily by these giant cranes working in pairs.

Like every firm engaged in producing war equipment, however, there have been many obstacles to overcome in order that the sudden demand for these giant cranes could be fulfilled.

"Problems, such as shortage of material, lack of certain vital parts, difficulties of our suppliers in procuring materials, and all of the unusual situations brought about by wartime conditions have been overcome," says Mark R. Colby, president of the company, "by the sheer determination of the

people in our employ and our supplying plants to get the job done.

"Our cranes are shipped by rail. On several instances whole trains have been made up where a battery of cranes was to be delivered. We have used trucks and trailers, and on many occasions, very heavy pieces of equipment have been shipped by air in order to keep faith with the shipyards depending upon us for the lift needed to meet their shipbuilding schedules.

"We have a heavy production program ahead of us for 1943," Colby states, "and we are constantly being called upon to produce more and more equipment. Of course, it is impossible to predict the number or type of cranes that will be produced during the coming year, but we can say that we shall certainly do everything within our power to supply the demand."

Colby cranes are now in service not only in the United States, but in many other parts of the Northern Hemisphere. Shortly before the war, the Colby Crane and Engineering Company was approached by one of our present Allies and asked to construct a traveling, revolving, hammerhead-type crane that would lift 25 tons at a 100-foot radius with a boom 90 feet above the traveled rails.

This job was done and proved so satisfactory that the same country returned last year and asked for the same crane but heavy enough this time to lift 50 tons at the same radius. This second crane was finished and delivered in due time and is now the biggest crane of its kind used in servicing ships in that part of the world.

Besides building the revolving cranes, Colby Steel and Engineering Company has designed and built several cranes for the Army and Navy during the past year adapted to the particular needs of these departments.

It is also interesting to know that the Colby cranes have been starred in a technicolor short produced by Warner Brothers. The picture, "A Ship Is Born," sponsored by the Maritime Commission, has been showing for the past sixty days at leading theaters all over the nation and shows the Colby cranes in action at a California shipyard.

Among the Seattle companies that have been of great assistance in helping the Colby Steel and Engineering Company in the production of its great revolving crane are Western Steel Casting Company, Prescott Iron Works, Western Gear Works, Pacific Car and Foundry Company, and Webster-Brinkley Company.

The following shipyards and using Colby cranes: Los Angeles Shipbuilding and Dry Dock Cor poration, Bethlehem Steel Company, Willamette Iron and Steel Co., Lake Washington Shipyards, California Shipbuilding Corp. Richmond Shipbuilding Co., General Engineering and Dry Dock United Engineering Co., Western Pipe and Steel Co., North Caro lina Shipbuilding Co., Oregon Shipbuilding Corporation, Consol idated Steel Corporation, W. A. Bechtel Co., Commercial Iron Works, Everett Pacific Co., Kaiser Co., Inc., Maxon Construction Co., Inc., Missouri Valley Bridge and Iron Co., Pollock Stockton Shipbuilding Co., Everett Pacific Shipbuilding Co.

"SUPERMEN
OF THE WAYS"

THE TREMENDOUS UTILITY value of the Colby revolving crane can be gained from these two photographs. The first shows two Colbys lowering the entire bow section of a Liberty ship into place, and in the second they are placing with ease the forward section of the deck house on the same ship. One shipyard using over 30 cranes reports that the percentage of operating time available for a period of 31 working days—three shifts per day-was 99.11 per cent.



A LIFE RAFT EVERY HOUR

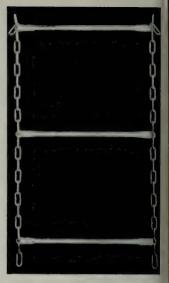
NATION-WIDE organization with its principal headquarters in Detroit, Michigan, and with branches in Oakland and in Los Angeles, the L. A. Young Spring and Wire Corporation, who before the war made springs for automobile cushions and springs for mattresses, now manufactures at the Oakland plant crew berths, life rafts, life floats, incendiary bomb boxes, collapsible canvas water tanks, cargo nets, debarkation nets, special maritime signal balls. loading scows, small parts for hand grenades, chime bridles, lumber slings, C. P. O. berths, troop transport berth frames, canvas bottoms, engine room escape ladders, lifeboat ladders, wood bunks, and in their Eastern plants, tremendous quantities of shells.

Thus the same machines which formerly made your auto and your bed the most comfortable in the world are now making your berth comfortable and helping to save your life at sea.

The L. A. Young Spring and Wire Corporation plant at Oakland is making a great reputation for carrying out difficult assignments with efficiency and dispatch.

One of the first marine products manufactured by this plant was a crew berth for conversion of merchant steamers to Army transports. All the orders for these came as emergency orders—15,000 in 15 days and so on.

This 15,000 order meant a considerable problem in finding materials for 15,000 pipe berth frames and 15,000 canvas bottoms. Three-quarters of a million brass grommets for the canvas had to be brought in from various sources by air express. Long distance phone calls and the telegraph produced 30,000 yards of heavy canvas, 50 miles of pipe, 12,000 lbs. of rivets, 140 miles of rope.



CHAIN LADDER

brought in by truck, rail and any other available rapid transit. The most difficult problem on this job was the 60,000 eye splices required, which was worked out satisfactorily and completed within the specified time.

All the problems of training men, of devising and installing new jigs and equipment and of realigning existing equipment were solved and the order was completed and delivered within the 15 days' time.

In the early spring of 1942, engineers of L. A. Young Spring and Wire Corp. designed and built a life raft, which passed satisfactorily all the tests of the Inspection and Navigation Department of the U. S. Coast Guard. A production line for these rafts has been built up to a present capacity volume of one raft an hour, completely equipped. For this production line, the engineers have, after much study and research, developed special automatic arc welding machinery to successfully weld light sheet steel for buoyancy tanks, All dies, jigs, and tools (Page 128, please)



TESTING of life raft

Victory Suits

PROVIDE PROTECTION

H. K. Shaw, the New England representative for the new Victory Life Saving Suit by Morner, reports that Coast Guard and Navy officers are finding the new Victory Suit extremely practical for wear on bridge watches in cold, wet weather. The value of life-saving suits as safety-measures in case of emergencies is already well known, but their usefulness as a protective suit is becoming increasingly evident, now that winter is here. Mr. Shaw, who has been supplying these suits to individuals in the Navy and Coast Guard at Boston, Massachusetts, points out that the Victory Suits may be purchased as an item of personal property, provided that actual sea duty is performed by the wearer (in order to provide the necessary priority rating), and the new low price adds to the popularity of the suit.

The following report was recently received by Mr. Shaw from an ensign in the Coast Guard, whose reaction is typical of the officers who have provided themselves with these double-purpose protection suits: . . . "I have found the Victory Suit indispensable in standing my bridge watches in inclement weather of all kinds. It not only kept me dry, but it also served as a break against the wind in keeping me comfortable in extremely cold weather. Though I have never had to employ it in the water, I only know that I shall welcome its sure-fire protection if that time ever arrives.'

A news dispatch from the Coast Guard Bulletin graphically reports on the performance of lifesaving suits for emergency protection:

"Forty eight days upon open life rafts, following the torpedo ing of their ship in mid-Atlantic, the experience of nine officers and crew members of a Norwegian ship, again demonstrated the value of protective suits as a means of preserving life. Looked upon primarily as a means of protecting the wearer while actually in the water, the incident referred to above emphasized the fact that this advantage is but one of those afforded the wearer. The experiences of the Norwegian crew clearly indicated that without protective suits they would have had little chance of survival.

"According to statements by those concerned, protective suits were worn by all hands, with one exception, at all times day and night except when they went into the water for the purpose of absorbing water to augment that which they had aboard the rafts. This one exception was the case of a man who had injured his foot and who was kept wrapped in blankets and other coverings to facilitate his care.

"The suits afforded protection from cold and wet, and of equal importance, permitted sleep which, above all, made the long period aboard the rafts endurable.

"The foregoing episode is but one of the many instances which have demonstrated the practical features of recently improved protective suits. While these suits are substantially watertight, buoyancy is provided by the kapok vest with which all suits must be equipped as required by regulation. The suits can be donned quickly and if the wearer finds it necessary to jump from a high deck into the water, the kapok



vest cushions the impact. The suit will keep him upright, the vest and weighted boots holding his chest high out of the water with his feet down. Such a position enables the wearer to open the suit at the neck to get at concentrated food or other articles.

"The suits are large enough to hold a layer of air which is retained for some time, thus insulating the body against the cold of northern seas. The layer of air is warmed by body heat and in turn keeps the body at a comfortably warm temperature."

Another especially significant consideration for those in southern waters is the fact that these life-saving suits serve to safeguard against being molested by sharks, which apparently are indifferent to the dark rubberized forms, since the wearers of the suits are sheathed in a "welded" one-piece garment.

Recently, Mr. Shaw demon-(Page 128, please)

Training Streamlined

THROUGH THE VISUAL METHOD



MICROFILMS and projector for industrial training.



by D. M. Hatfield
Editorial Director Photo & Sound

**A MINIMUM

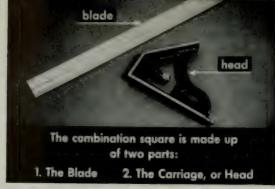
of error and a maximum of speed." That has become the shipbuilder's chantey. With the enormous numbers of ships needed for victory and the considerable loss in trained personnel resulting from transfer to the armed forces, the builder frequently finds it next to impossible to meet his production schedule. The solution to the problem is being reached in various ways—with assembly line methods, prefabrication, and through personnel training.

In the "good old days" it took years to train a man to be a good shipfitter, shipwright, rigger, or loftsman. Now we must have trained men immediately - we cannot wait-there's a war to be won. Regardless of our attitude concerning the drafting of trained shipbuilding personnel for military service, the fact remains that many of the best-trained men are gone just when an expanding program demands more experienced men than ever before. How are inexperienced, "green" men-and women - to be brought to the point that they can be trusted to do a job quickly and accurately? Obviously, through some sort of

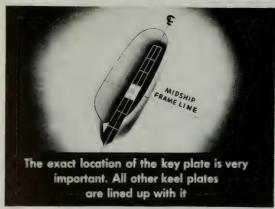
training program which utilizes the "know-how" of old hands at the shipbuilding business. But, to take a leaderman or quarterman off the job to do the teaching will slow the work. Also, whether or not we believe G. B. Shaw's precept that "those who can, do; those who can't, teach," it is generally true that good workmen cannot put across their trade with any great degree of clarity in a classroom. They have been trained to do, not to teach.

One answer to the problem lies n the utilization of visual training methods. There can be little question as to the practical suitability of the visual method for quick raining. One picture will tell as much as several lines of printed words, and do it with greater clarty. Then too, information shown n a picture will be remembered nuch longer than that which is nerely written. Through the melium of photographs, a class of my size may see pictured the stepy-step procedures involved in the performance of any operation, no natter how simple or how comolex. Information gathered from experts in the various trades is organized and condensed to preent the clearest possible story in he shortest possible time. Film vork sheets and supplementary tudy guides all combine to form highly efficient course of study, equiring but a minimum of the nstructor's time.

It is usually not practicable to ake the whole class out on the vays, or into the plate shop, or nto the mold loft, actually to see job being done. In the first place, large class would get in the way f the work, and secondly, the hances of every man in the class etting a good look under such onditions is pretty remote. Also, t takes time to move a class round the yard-time that is to a reat extent wasted. With films, owever, there is no such waste of ime; the class may be "transportd" from one end of the yard to he other in less than the twinling of an eye. Everyone in the lass gets a good view-the best









view—of the action, and the instructor can talk without trying to be heard above the sounds made by chippers, riveters and "bolteruppers."

Motion pictures, glass slides and slidefilms have all been found highly valuable for such training work. No doubt many of you are familiar with some of the outstandingly excellent motion pictures on welding practice. In general, however, motion pictures are somewhat expensive; each production may cost anywhere from a few thousand to many thousands of dollars. Also, the equipment needed to show them is usually high-priced.

Glass slides, each a still picture, are less expensive, although they are easily broken, and the individual slides making up a series depicting an operation may be misplaced or even lost, leaving gaps in the story.

Slidefilms, a fairly recent development in visual training methods, are proving to be one of the best all-around teaching media. They are reasonable in price, relatively indestructible, and can be stored in a small space. The slidefilm is a strip of film 35 millimeters wide (the same width as commercial movie film) on which is a series of still pictures showing the steps involved in doing a particular job. Slidefilms may be "sound," with an accompanying phonograph record which explains the pictures audibly, or they may be "silent," in which case a sentence or two printed at the bottom or top of each still picture or "frame" explains the particular step shown. With this type of film, the instructor may allow a particular photograph to remain on the screen as long as desired while he enlarges on the subject, pointing out any specific problems involved in performing that operation. Also, members of the class may ask questions of the instructor. This is one of the most valuable aspects of training with silent slidefilmsdiscussion may be carried on throughout the showing of a film. A motion picture does not permit such discussion until after the film has been run through the projector, when frequently questions which may have arisen in the minds of members of the class have been forgotten.

Just how do slidefilms function in a personnel training program? Ordinarily, they are prepared to be used in units. For instance, a series now available on shipfitting includes a unit of eight separate slidefilms on common tools-tools used every day by the shipfitter. The combination square, the center punch, the trammel rule - a few "how-to" sessions on the most efficient methods of using such tools will save the beginner hours of time and eliminate the necessity for prolonged close supervision. Other units deal similarly with prefabrication and installation of various ship structures. For instance, the typical double bottom unit of a cargo vessel is carried through the various steps in its construction until it is finally installed in the ship. Blue print reading is another subject to which slidefilms can contribute. Films on blue print layout, projection (to assist in visualizing the object from the blueprint drawing), standard lines, standard symbols, sections and detail designations—all of these form a course of study which presents the subject quickly, but in easily "digestible" doses.

That slidefilms are proving of direct value to the war effort is being attested by their continually increasing use in various branches of the armed forces. The Navy, for example, is using literally thousands of slidefilms to train its men to do a better job. And so, however prosaic the method, we are beginning to achieve fulfillment of a prophecy—". . . and we'll build better ships, and we'll sail them well, and we'll win the war, God willing!"

A LIFE RAFT EVERY HOUR

(Continued from page 124)

required for fabrication and assembly were designed and built in the plant.

The plant has large orders for this raft from various shipbuilders, and it is now in production.

A short time after the life raft was designed it was found that there was an unfilled demand for life floats. The L.A. Young Spring and Wire Corporation's engineering staff designed and had approved 60-, 40-, 25- and 15-man doughnut type life floats. At the present time, they are delivering twenty or more a day of these floats to be used on various types of ships in the Pacific.

One of our illustrations shows the raft being tested. The other illustration shows an ingenious patented chain ladder with tubular steel rungs. It is obvious from the construction of this ladder that many of them can be combined into a large debarkation net merely by joining them with staggered rungs, and so making a connected horizontal series of ladders.

VICTORY SUITS

(Continued from page 125)

strated the Victory Suit at the University Club swimming pool In this exhibition, which was attended by Navy and Coast Guard officers, two contestants put on the suits in less than one-half minute and raced the length of the 25-yard pool. Both used the recommended back-stroke paddle motion. The winner's time was 29 seconds, and the "swimmer up" was only one second behind him. The lights were all turned off for the demonstration of the new watertight red light, which can be kept illuminated for 12 hours and is visible for about three-quarters of a mile, or more depending on the altitude of the observer.



MODERN FOUNDRY UNIT, part of plant facilities of the Kirsten Pipe Co.

on most non-ferious metals, including bronze, brass, copper and alumnum. Difficult core work is a specialty.

The interesting feature of this company's war production is that methods of precision manufacturing, which had been developed to a fine point with the Kirsten pipe, are now basically applicable to the manufacture of machine products for war. In addition to its own shop facilities, the entire time of a heavy duty machine shop has been taken over, and precision work requiring heavier equipment is han-

Kirsten

SEATTLE PIPE FIRM GEARED FOR WAR OUTPUT

pperation at the Kirsten Pipe Co., Seattle, Wash., figures importantly in war production, it is reported by C. K. Wiggins, executive vice president. This company was encaged in mass production of a netal-stemmed pipe for smoker's

pleasure before the war, but is now 100 per cent in war work, concentrating on light metal parts for marine machinery and other war gear.

Eighty-five per cent of the current output of this foundry is in bronze, although runs are made dled in this shop, which is operated as a corollary of the main plant.

Included in the Kirsten output is mass production of oil pumps for all Liberty ship steering gear produced throughout the nation, as well as in West Coast shipworks.



LEFT: Modern gas-fired core oven at Kirsten Pipe Co. foundry.

BELOW: Modern sand blasting (Rumelin) equipment and two metal cutting saws (Davis and Wells) used at Kirsten Pipe Co. foundry.





Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A DEPARTMENT FOR DECK OFFICERS

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Questions from the Ships

Dear Skipper:

Should a member of the crew of an American merchant vessel commit an offense against the law of a foreign country in whose port the vessel is docked, who has jurisdiction over the crew member? Should the local police be permitted to come on board and arrest the offender so that he might be tried by the local courts? This has been a widely discussed question on board our ship; none of us being any too well versed in the law, we have decided to pass the question along to our old friend "The Skipper."

Yours truly,

J. H. B.

This is a very interesting question and is frequently asked by seamen in the merchant service. In order to give a clear answer, we shall have to dig into a little law; however, if we lay aside legal phraseology, the answer will be understandable to the layman.

In most cases, the extent of criminal jurisdiction varies in the different sovereign states and countries and is usually regulated by treaty. A private vessel within the territorial waters of a foreign state is subject to the civil and

criminal laws and jurisdiction of that state. Ordinarily, the interior discipline of the vessel is not interfered with unless the laws of the port are violated.

It is frequently provided by treaty that disputes between the master, officers and crew may be settled by their consuls, provided that they do not disturb the peace and tranquillity of the port.

The jurisdiction of every sovereign state over the merchant vessels of other nations within its boundaries is absolute, so far as they choose to enforce that right; arrests may be made thereon, and offenders removed from the vessel for trial according to the laws and customs of the country. Also the right for local authorities to search a vessel in their ports for a person charged with crime is established, unless modified by treaty. The master is bound to submit to the local jurisdiction within which his vessel lies. However, as already stated, if the crime committed on board a foreign vessel in the territorial waters of another country is merely a matter of breach of ship's discipline or custom on the foreign ship, the local authorities will not

intervene, unless requested to do so by the master of the vessel of the consular representative of her flag. On the other hand, if the crime is of a serious nature, such as is usually punished by all nations in a severe manner, the local authorities will take jurisdiction.

It is interesting to note that crimes committed on American merchant vessels while in the waters of another country may also be brought to trial before an American admiralty court. This power is granted to our Federal courts to the extent that the foreign sovereign does not interfere If the foreign sovereign decides to surrender jurisdiction of the crime to the American Federal courts, then it is the duty of the master to return the offender to the proper authorities in the United States for trial. This was illustrated recently in the case of United States v. Flores, 289 US, 137, 77 L.ed. 1086: The United States, as sovereign of a vessel, took jurisdic tion over a crime committed on the Congo River. One American citizen murdered another on board an American merchant vessel while that vessel was at anchor at the port of Matadi in the Belgian Congo, 250 miles inland from the mouth of the Congo River. In this case, the local Belgian authorities relinquished their jurisdiction, and

the man was returned to Philadelchia for trial before a United
States Federal court sitting in Admiralty. Owing to the fact that
this crime was a violation of the
criminal code, a jury was used in
the Admiralty court because our
constitution guarantees an accused person the right to trial by
ury when the criminal code is intoked.

However, should the crime be committed while the vessel is on he high seas, then the situation would be different. No sovereign as control of the high seas and rimes committed there come within the jurisdiction of the admiralty courts of the nation to which the ship belongs. This is under the generally recognized ule that the law of the flag follows the vessel on the high seas.

An interesting follow-up on this

ubject is when the offense is con-

ummated on the high seas but

ot on shipboard; the admiralty urisdiction as administered by he Federal courts will still be enorced. The old case of Holmes. Wall. Jr. 1; 26 Fed. Cas. No. 5,383 is a very interesting and inusual example. An American hip, William Brown, laden with passengers and cargo, struck an ceberg in the North Atlantic and ad to be abandoned. Nine of the rew and 32 passengers embarked n one lifeboat. Holmes was one of the crew and took charge of the feboat in an effort to reach Newoundland, about three hundred niles away. The lifeboat proved eaky and was so greatly overpaded by those on board as to fill ith water in the rising sea. In he face of urgent necessity, and nder the general direction of Iolmes, sufficient of the passeners were thrown overboard to nable the boat to float until

It must be noted that the above iscussion in answer to your very interesting question applies only private vessels.

icked up by a passing ship.

Iolmes was brought to trial in

ederal court and convicted of

With public vessels, such as aval vessels, the situation is

vastly different. The state exercises jurisdiction over its public vessels at all times, whether upon the high seas or within the territorial waters of another state. However, they are subject to local harbor regulations, such as a proper place to anchor. A state has the right, and frequently exercises it, to prevent entry to its harbors of foreign vessels.

In regard to merchant vessels and all other private vessels of the United States, crimes committed on the territorial coastal waters of a state are within the concurrent jurisdiction of the courts of the state having sovereignty over such waters, and the Federal admiralty courts, if the crime was committed below the low water mark of the shore. Merchant vessels are regarded for many purposes as floating portions of the country to which they belong. and of the particular state of their home port. An American merchant vessel on the high seas will therefore continue under the appropriate laws both of the United States and of her own particular state, and, while in foreign ports, be subject to local law. She will never be outside the scope of some law and although several jurisdictions may overlap, crimes committed on board will not escape punishment.

Dear Skipper:

In the absence of a doctor on board the vessel, what are the Master's duties in regards to giving medical attention to members of the crew?

Yours truly,

J. G. T.

ANSWER

In the absence of a doctor, the master must provide the necessary medical attention to any member of the crew or other person on board his vessel during the voyage.

The law specifically states (46 U.S.C. 666) that every vessel belonging to a citizen of the United States, bound from a port in the United States to any foreign port, or being of the burden of 75 tons or upwards, and bound from a

port on the Atlantic to a port on the Pacific, or vice versa, shall be provided with a chest of medicines; and every sailing vessel bound on a voyage across the Atlantic or Pacific Ocean, or around Cape Horn, or the Cape of Good Hope, or engaged in the whale or other fisheries, or in sealing, shall be provided with, and cause to be kept, a sufficient quantity of lime or lemon juice, and also sugar and vinegar, or other antiscorbutics, to be served out to every seaman as follows: The master of every vessel shall serve the lime or lemon juice, and sugar and vinegar, to the crew, within ten days after salt provisions mainly have been served out to the crew, and as long afterwards as such consumption of salt provisions continues; the lime or lemon juice and sugar daily at the rate of onehalf an ounce each per day; and the vinegar weekly, at the rate of a half pint per week for each member of the crew.

Penalty for Non Compliance of the Above. (46 U.S.C. 667)

If, on any such vessel, such medicines, medical stores, lime or lemon juice, or other articles, sugar and vinegar, as required by the preceding section, are not provided and kept on board, as required, the master or owner shall be liable to a penalty of not more than \$500; if the master of any such vessel neglects to serve out the lime or lemon juice, and sugar and vinegar in the case and manner directed, he shall for each such offense be liable to a penalty of not more than \$100; and if any master is convicted in either of the offenses mentioned in this section, and it appears that the offense is owing to the act or default of the owner, such master may recover the amount of such penalty, and the costs incurred by him, from the owner.

Treatment of Sick or Injured Sea-

While it is undoubtedly the master's duty to provide medical care for the injured man, and every ship's officer is required to have a working knowledge of the principles of first aid to the in-

nanslaughter.

jured, nevertheless, a ship's officer cannot be held to the same standard of skill as a professional medical man. In some cases, where a person's life is likely to be endangered for lack of expert medical attention, it may become the master's duty to put into the nearest port where such attention can be had, providing it is within reasonable distance and the safety of the ship and its passengers and cargo would not be endangered. The courts have said: "With reference to putting into port, all that can be demanded of the master is the exercise of reasonable judgement and the ordinary acquaintance of a seaman with the geography and resources of the country. He is not absolutely bound to put into such port if the cargo be such as would be seriously injured by the delay. Even the claims of humanity must be weighed in the balance with the loss that would probably occur to the owners of the ship and cargo. A seafaring life is a dangerous one: accidents of this kind are peculiarly liable to occur, and the general principle of law that a person entering a dangerous employment is regarded as assuming the ordinary risks of such employment is peculiarly applicable to the case of seamen." In any case, the master must use his best judgment in deciding whether or not to put into port.

Upon arrival in port, any serious case should be reported at once to the proper authorities and arrangements made to remove the man to a hospital for treatment. In an American port, the man should be sent to the marine hospital, this can be arranged through a medical officer of the United States Public Health Service. Marine hospitals are situated in the principal American seaports. Should the injured man be sent to other than a marine hospital, he should, if requiring extended treatment, be moved to the nearest marine hospital as soon as he can bear transportation. In foreign ports, the master should see to it that seamen who have become incapacitated from illness or

injury and need hospital treatment, are discharged by the United States consul, and by him sent to the hospital.

The vessel is obliged to provide for the maintenance and cure of any officer or seaman taken ill or injured in the service of the vessel. This duty may last for a reasonable time after the end of the voyage. The shipowner is not liable for any disability arising out of venereal infection, nor is he liable if, at the time of engagement, the person employed refused to submit to medical examination.

After a seaman has been furnished with a suitable physician, he cannot hire another and different physician at the ship's expense, nor after the seaman has been placed in the marine hospital by a vessel, is the vessel liable for expenses incurred by the seaman elsewhere.

If a seaman should be sent to the hospital for some injury that was caused by something ashore, while the man was not engaged on ship's duty, then he would only be entitled to maintenance and cure, and his wages would stop when he ceased work. However, the vessel would still be obligated to return the man to the United States.

The word "maintenance" as used here is deemed to mean "food and lodging suitable for the injured man's rank and station in life."

The word "cure" as used here is deemed to mean in its original sense, "reasonable cure" but does not mean, "positive cure."

Destitute seamen. Under the laws of the United States, it is the duty of the Consul to provide for the maintenance of destitute or shipwrecked seamen and to transport them to the nearest convenient port in the United States.

Dear Skipper:

If a man returns to the ship in an intoxicated condition, has the watchman on the gangway legal authority to refuse him entrance to the ship on the premise that he might hurt himself and get damages from the ship? If he has no such authority, what is his duty?
Yours truly,

K. J. L. ANSWER

It is doubtful if the watchman has the blanket authority to prohibit admission of a drunken crew member on board the vessel without express orders from some higher authority. However, such orders could be given providing the necessary steps were taken to insure the man being taken to a place of safety. For instance, the man could be placed in the city prison until such time as he was again sober.

As a general rule, if a man returns to the vessel under the influence of liquor and is unable to get safely over the gangway, the watchman should detain him in safekeeping and call the officer of the deck; in most cases the man can be escorted to his quarters and put to bed without a great deal of trouble. But if, on the other hand he is unruly and boisterous to the extent that he is disturbing the peace and tranquility of the port. he should be turned over to the authorities for safe keeping and to be dealt with accordingly.

It would be very poor policy for the watchman to refuse admittance to the vessel and to leave the man on the dock without taking further steps to put the man in safe keeping. Although we all abhor dealing with a drunk, we cannot leave him lying around the dock or the street where he is subject to danger which, through his inability to control his movements, he is unable to either realize or avoid.

The law gives the master authority to have any crew member placed in prison for safe keeping. It is a wise thing to notify the man in writing that he is in confinement for safe keeping and not as a punishment.

At a large terminal, where watchmen are available, it is far better to stop the drunken man at the pier gate rather than to allow him to reach the ship's gangway at all, such action would not only avoid any possibility of the man being injured on the dock, but

(Page 135, please)



by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief,"
Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

VIII-Electric Propulsion Equipment (cont.)

MAIN TURBINE

The main turbine is a 10-stage mahine in which the bucket wheels are hrunk on and keyed to the shaft; the irst wheel carries a double row of blades, and all of the remaining wheels arry a single row, as shown in Fig. 7.

The diaphragms are held in recesses nachined in the casings and are split it the horizontal joint so that the uper halves are lifted with the upper half of the casing. The nozzle partitions are made integral with the dia-

The thrust of the turbine and the cenerator rotors is absorbed by a ingle thrust element at the high-presure end of the turbine. This thrust lement consists of two rotating colars keyed to the shaft and two babitted thrust surfaces attached to ends if the shaft bearing, shown in Fig. 7.

Leakage of steam or air through the penings in the casing where the rotor asses through is prevented by package consisting of grooved metallic ings that fit around the shaft with mall clearance.

Flow of steam between stages brough the shaft openings in the diahragms is prevented by spring-backed acking rings dovetailed into the diahragm openings and having teeth hat fit with small clearance around he shaft.

Openings for the extraction of steam re provided at four points in the turine casing, as indicated in Fig. 7. The aximum temperature and pressure onditions at the several extraction anges are as follows: 710 F.T.T. at 253 G at the 3-in, opening from the 1st-stage shell; 650 F.T.T. at 176 G at the 3.5-in, opening from the 2nd-stage shell; 520 F.T.T. at 74 G at the 5-in, opening from the 4th-stage shell; and 370 F.T.T. at 17.5 G at the 8-in, opening from the 6th-stage shell.

A 3-in, sentinel valve set for 2 to 3 lb, gage is mounted on top of the exhaust casing.

Oil-operated Governing Mechanism

The purpose of the governing system is to provide pre-emergency protection to prevent the speed of the turbine from exceeding the maximum designed speed by more than 15 per cent. During maneuvering or port operation the control valve is used for direct control of the steam flow to the turbine. During normal operation at sea the control valve is wide open, and steam flow to the turbine may be adjusted by the hand valves. Manual operation is required only in case the speed governor becomes inoperative, in which case the steam flow to the turbine may be controlled by manual operation of the emergency lever located on the control panel.

Speeds

In describing the governing mechanism, reference is made to the following speeds:

Tripping Speed: This is the speed at which the emergency governor operates to trip the throttle valve closed; about 120 per cent normal rated speed (4320 rpm).

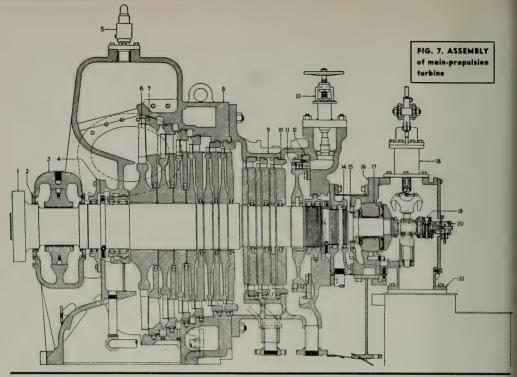
The Normal Operating Range: The normal operating range of the turbine

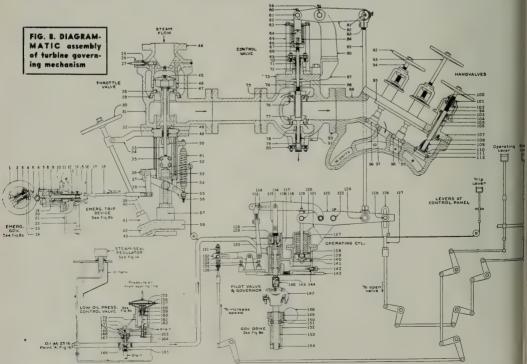
is from 30 per cent normal speed (1080 rpm) to 110 per cent normal speed (3960 rpm).

Low Speed: The low-speed point is that speed below which the governing mechanism does not function. This is about 5 per cent less than the idling speed of the turbine-generator set.

Automatic Maneuvering or Port Operation

The following description of operation is given with reference to Fig. 8. The governor (147) is driven through a worm and gear (148-149) by the turbine shaft; the movement of its weights is therefore proportional to the speed of the turbine. When the turbine speed, because of decreased load, increased steam pressure, or other reason, increases above normal speed, the governor weights move outward and draw downward the speedgovernor pilot (117) to shut off oil supply to the under side of the piston (141) in the operating cylinder and to uncover the lower (drain) port in the pilot-valve bushing (117) to drain oil from the operating cylinder, causing the operating piston (141) to move downward; this downward movement of the piston is transmitted through lever (122) and rod (85) to move the governing valve (75) toward the closed position to decrease the steam flow and thereby reduce the speed of the turbine. A state of balance for the new operating condition is regained in the following manner: the pilot-valve bushing (116) is connected through rods and levers to the operating piston (141), so that downward movement of the piston causes the bushing to move downward also, to return its ports to a line-and-line position with the speedgovernor pilot (117). The turbine then





continues to operate at the original normal speed.

When some condition causes the turbine speed to decrease below normal, the governor weights move inward to raise the speed-governor pilot and uncover the upper (inlet) port in the pilot bushing (116). Uncovering this port admits oil to the operating cylinder. The piston (141) then moves upward, and thereby opens farther the governing valve (75) to admit additional steam to the turbine in order to bring the speed back to normal, As before, a state of balance for the new operating condition is obtained through lever (118) which raises the pilot bushing (116) to a position corresponding to the new position of the pilot valve (117).

The function of the operating lever at the control panel in determining the speed at which the turbine will operate (within the normal operating range) is as follows: moving the governor lever away from the panel moves the rod (136) upward, this action is transmitted through lever (132) and rod (128) to move downward the pilot bushing (116), thereby uncovering its inlet port to admit oil to the cylinder and cause the valve to open farther, as described previously. The resultant increased speed of the turbine causes the pilot valve (117) to move downward until it reaches a line-and-line position relative to the bushing (116). It is evident, therefore, that the position of the pilot bushing, as obtained through movement of the operating lever, determines the speed at which the turbine operates.

Emergency Operation

In case the turbine governor becomes inoperative, the mechanism will not maintain automatically a constant turbine speed at the point determined by the position of the operating lever. In this instance, the operating lever is left in the position nearest the control panel, and the speed at which the turbine operates is determined manually by means of an emergency lever at the control panel. It should be noted that under the above conditions the governor does not act as a pre-emergency control (described above) and for this reason the main turbine should not be used for "in port" operation.

The normal position of the emergency lever is nearest the panel. Moving the lever away from the normal position moves the rod (127) and slotted knuckle (126). After the knuckle has traveled about ½ in., it engages the pin (126) to pull down the lever (122) and thereby moves the governor valve (75) toward the closed position

By backward and forward movement of the emergency lever the governing valve may be lowered and raised respectively to decrease or increase the speed of the turbine. The maximum load that may be obtained by adjustment of this lever, with the propulsion motor connected, is about 50 per cent normal.

Our next article will contain information on the emergency governor, and the figures in this issue should be retained for reference.

"The Chief"

STEADY AS YOU GO

(Continued from Page 132)

would discourage such conduct by those habitual offenders who are a constant source of trouble. In the long run, the small cost of placing the man in safe keeping until he sobered up would far outweigh the cost of numerous cases of litigation and settlement. However, this of course depends upon the policy of the steamship company; if it is left in the hands of the ship's officers, then they must act accordingly, taking into consideration the facts of the case.

Always have the man escorted to his quarters if he is alowed on board the vessel, under no circumstances allow the man around the decks until he is able to take care of himself.

If he is unruly and you have no place of safe keeping on the vessel, do not hesitate to have him locked up for safe keeping ashore.

1	Guide cap	59	Pin	117	Pilot valve
2	Spring	60	Oiler	118	Lever
3	Pin	61	Pin	119	Piston rod
4	Plunger	62	Link	120	Pin
5	Emergency trigger	63	Spring plate	121	Bracket
6	Spring	64	Pin	155	Lever
7	Pin	65	Support rod	123	Pin
8	Pin	66	Spring collar	124	Pin
腦	Collar	67	Connection piece	125	Pin
10	Spring	68	Valve stem		Slotted knuckle
11	Bracket	6.0	Gland support	127	
12	Trip	70	Gland		Connecting rod
13	Bushing	71	Packing	129	Spring
14	Lever	72	Bushing	130	Bushing
15		73	Cover	131	Spring
16		74	Valve nut	132	Lever
17		75	Double-seated valve	133	Pin
18		76	Upper valve seat	134	High-speed stop
19		77	Lower valve seat	135	Low-speed stop
20		78	Bushing	136	Spring stud
21		79	Gland	137	Spring
22		80		138	Spring collar
23		81	Pin	139	Pivot block
24		82	Lever		Piston ring
25	-0	83	Knuckle	141	Piston
25		84	Link	142	Throttling-screw cap
27		85			Housing
28				144	
29		87	Same as 73		Pivot rod
		88	Pin	146	
30		89	Handvalve manifold	147	Speed governor
31		90	Valve body	148	
32		91	Packing		Worm gear
33		92			Retaining ring
34		-		151	
35		93	Valve stem	152	
36		94	Valve stem	153	
37		95	Retainer	154	
38		96	Valve		Pressure cap
39		97			Diaphragm
40		98		157	
41		99			Spring
42		100		159	
43		101			Adjusting nut
44		102		161	
45		103		162	
46		104			Valve body
41		105			
48		106			Bottom cap
45	Packing	107			Seat ring
50		108			Main-valve body
5		109	Sleeve	167	
5	2 Lever	110	Washer	168	
53	5 Sliding nut	111	Valve	169	
54	Link	112	Valve seat	170	Cylinder cover

Piston

173 Dropleg

Main valve

Connection piece

Latching-up lever

Screw spindle

58 Double gear

113

115 Link

114 Pin

Connection piece

116 Pilot-valve bushing



In the Ways SHIPS IN THE MAKING

NOVEMBER DELIVERIES BRING SHIPBUILDING NEAR 1942 GOAL

American shipyards, striving to carry out President Roosevelt's directive calling for 8,000,000 tons of new shipping in 1942, moved a step nearer that goal by delivering into service 84 vessels totaling 891,700 deadweight tons in November.

The month's output of completed ships raised the total production for the year to 625 vessels of 6,890,000 deadweight tons, leaving 1.110,000 tons to be delivered in December. The Maritime Commission stated that its schedules for December indicate that the nation's shipvards will turn out the required tonnage.

November's deliveries were an improvement over the previous month's total of 81 vessels. Included in the November total are two vessels of special types for the armed forces. Although there has been a temporary diversion of a considerable portion of the merchant shipbuilding facilities to this special construction, it will not prevent the shipyards from attaining the figure set by the President.

Of the 82 merchant ships placed into service in November, there were 68 Liberty ships, six C-type vessels, five large tankers, one coastal cargo carrier, and two cargo carriers for the British.

West Coast yards again led the merchant ship parade by delivering into service 48 vessels. East Coast yards followed by delivering 20 vessels, Gulf Coast yards delivered 13, and the Great Lakes delivered one. The Oregon Shipbuilding Corporation of Portland, Oregon, and the California Ship-

SHIPYARD	TYPE OF SHIP	NO. OF SHIP
Alabama Dry Dock & Shipbuilding Company, Mobile, Alabama	Liberty	2
Baltimore, Maryland	Liberty	3
Sparrows Point, Maryland	Passenger & Cargo	1
Wilmington, California	Liberty	13
New Orleans, Louisiana	Liberty	5
Kearny, New Jersey	C-2 Cargo	1
Houston, Texas	Liberty	5
Sturgeon Bay, Wisconsin	Coastal Cargo	1
Sausalito, California	Liberty	1
Oakland, California	C-2 Cargo	1
Wilmington, North Carolina Oregon Shipbuilding Corporation.	Liberty	7
Portland, Oregon	Liberty	13
Beaumont, Texas	C-1 Cargo	1
Shipyard No. 1), Richmond, California . Permanente Metals Corporation (Richmond	Liberty	8
Shipyard No. 2), Richmond, California . Seattle-Tacoma Shipbuilding Corporation,	Liberty	10
Tacoma, Washington	C-3 Cargo	1
South Portland, Maine	Liberty	1
Chester, Pennsylvania Todd-Bath Iron Shipbuilding Corporation.	Tanker	4

British

Tanker

C-3 Cargo

NOVEMBER MERCHANT SHIPS DELIVERED

building Corporation, Wilmington, California, again tied for individual honors by delivering into service 13 vessels each.

Western Pipe & Steel Co. of California

San Francisco, California .

South Portland, Maine

Welding Shipyards, Inc.,

Norfolk, Virginia

November also saw the first delivery of a seagoing cargo ship to the Maritime Commission by a Great Lakes yard when Leatham D. Smith Shipbuilding Company, at Sturgeon Bay, Wisconsin, completed a coastal cargo ship. Todd-Bath Iron Shipbuilding Corporation, at South Portland, Maine, delivered two vessels, thus completing its contract of thirty ships for British account.

Bellingham Builds Salvage Vessels

An interesting type of salvage vessel known to the Navy as BARS or ARS is being built at the Bellingham Marine Railway and Boatbuilding Company, in Bellingham, Washington, on Puget Sound.

One of these vessels, the Lincoln Salvor, has been launched and is nearing completion; two others are on the ways and nearing the time of launching.

The price of these vessels to the builder is about \$1,150,000. They are a highly complex and intricate construction job, requiring the best in boatbuilding skill. Fully equipped, the Navy Department has stated their total cost at about \$2,000,000.

The keel of the salvage vessels is 170 feet long, made of several pieces of carefully selected Douglas Fir. Stems are of oak with four-inch shoe of oak extending the length of the keel. Framing is sawed oak. The planking is double, both lavers run fore and aft. The inner layer is two inches in thickness and nailed throughout with galvanized fastenings. The outer layer is three to five inches thick and is through-bolted. An inner ceiling from five to eight inches in thickness and a steel sheer strake gives the hull further strengthening.

Stringers, shelves and clamps are also employed as they are in large, heavy wooden vessels.

Floor strength is unusually great, due to heavy oak floors of ordinary style bolted to the keel. Much strength is obtained in the beam constructions, with beams placed at every frame, throughbolted. The hull is given extra safety and strength by the use of numerous steel bulkheads. Decking is fir, hatch nail-fastened throughout. Sheer strake, covering boards and king planks are fir; rails, bulwark and rail stanchions are steel.

The upper deck, bulwarks and house of the salvage vessels are of steel.

In the BARS Cooper Bessemer



BARS 9 SALVAGE VESSEL

high-speed marine diesel generators supply motive power for General Electric propulsion motors, driving cast bronze Coolidge propellers through forged steel shafts. Struts — one to each side — shaft bushings, single rudder stocks and rudder quadrants are all fabricated steel. The rudders themselves are solid oak construction.

A steering motor under the aft deck is directly connected to rudder in turn to the wheel-house standard by electric controls. Fuel tanks, four in number, are welded wrought iron; water tanks are galvanized. Engine beds are of onepiece welded steel.

The BARS has three auxiliary diesels for lighting and other purposes, with a full complement of fire and bilge pumps, power and hand deck winches and other equipment.

Her hull contains approximately 300,000 feet of fir, 15,000 square feet of waterproof plywood, and 192,000 feet of oak. There is about \$19,000 worth of fastenings used in the yessel.

LIBERTY RECORD REDUCED IN NOVEMBER

			No. of	Average Days
Rank Yard		Management	Ships	per Ship
1	Oregon Shipbuilding Corporation Portland, Oregon	Kaiser	13	37.5
2	Richmond Shipyard No. 2 Richmond, California	Kaiser	10	43.8
3	Bethlehem-Fairfield Shipyard, Inc. Baltimore, Maryland	Bethiehem	3	46.3
4	Richmond Shipyard No. 1 Richmond, California	Kaiser	8	49.9
5	California Shipbuilding Corporation Wilmington, California	McCone-Bechtel	13	50.8
6	North Carolina Shipbuilding Co. Wilmington, North Carolina	Newport News	7	56.0
7	Delta Shipbuilding Co., Inc. New Orleans, Louisiana	American	5	81.2
8	Houston Shipbuilding Corporation Houston, Texas	Todd	5	83.6
9	Alabama Dry Dock & Shipbuilding Co. Mobile, Alabama	Alabama DD	2	93.5
10	South Portland Shipbuilding Corp. South Portland, Maine	Todd	1	130.0
11	W. A. Bechtel Company Sausalito, California	Bechtel	1	149.0

Liberty Record Reduced in November

Construction figures reveal that the November delivery of 68 Liberty ships, a new monthly high for this type of vessel, averaged only 56 days from keel-laying to delivery. The average is an improvement of 10 days on the October figures. The previous best delivery total of Liberty ships was 67 in September. Liberty ships are now being constructed in one-fourth of the time that was necessary to produce them last January when the program first got under way. At that time the average was 241.3 days from keel-laying to completion. Since then every month has witnessed a steady and regular reduction in the average.

West Coast yards maintained their lead in the Liberty ship race, with Oregon Shipbuilding Corporation delivering 13 ships into service in an average of 37.5 days, while Richmond Shipyard No. 2 delivered 10 ships into service in an average of 43.8 days. The Bethlehem-Fairfield Shipyard at Baltimore, Maryland, took third place by delivering three ships in an average of 46.3 days.

7 Yards . . . 9 Manufacturers Get "M" Awards

Seven shipyards and nine manufacturing plants, located in all parts of the United States, were designated on December 1, 1942, to receive high Maritime Commission "M" awards and gold stars for meritorious production.

The Delta Shipbuilding Company, Inc., New Orleans, Louisiana, for the first time joins the ranks of the nation's shipyards holding Maritime Commission Merit "M" awards. Delta will receive the Commission's "M" pennant, Victory Fleet flag, and labor merit badges for all workers for achievement in the production of Liberty ships. This is the third Commission award to Gulf Coast shipyards. The first was the Houston Shipbuilding Corporation, Houston, Texas, and the second was the Alabama Dry Dock & Shipbuilding Company, at Mobile, Alabama.

Six other yards designated to receive gold stars for continued achievement in ship production are: Bethlehem-Fairfield Shipyard, Inc., Baltimore, Md., (3rd award); California Shipbuilding Corp., Wilmington, Calif., (4th award); North Carolina Shipbuilding Company, Wilmington, N. C., (3rd award); Oregon Shipbuilding Corporation, Portland, Oregon, (7th award); Richmond Shipyard No. 1, Richmond, Calif., (4th award); Richmond Shipyard No. 2, Richmond, Calif., (3rd award).

Nine manufacturing plants will receive the Maritime "M" pennant, Victory Fleet flag, and labor merit badges for their employees for the first time. They are: Alcoa Division of American Locomotive Company, New York City, maker of masts and kingposts for Company.

mission ships; Cooper-Bessemer Corporation, plants at Mt. Vernon, Ohio and Grove City, Pennsylvania, maker of low, medium. and high pressure cylinder castings; Davis Engineering Corporation, Elizabeth, N. J., feed water heaters; Federal Telephone and Radio Corporation, Newark, N. J., radio equipment; M. W. Kellogg Company, Jersey City, N. J., main condensers; The National Supply Company, Springfield, Ohio, diesel engines; Production Engineering Company, Berkeley, Calif., triple expansion engines; Tube-Turns Inc., Louisville, Ky., tubeturns and flanges; and Young Iron Works, Seattle, Washington, Timken roller bearing blocks.

Ship Repairers Record for 1942

A world's record in ship repair work was recently shattered in a twelve-month period by the American shipbuilding industry, according to a statement made by H. Gerrish Smith, president of the National Council of American Shipbuilders.

"In that period repairs were completed on over 12,000 vessels of mostly seagoing character," the shipbuilding executive pointed out, but explained that in this number the same vessel may have been repaired several times. "The merchant ship tonnage of the United States and a substantial share of the other United Nations is being continually made seaworthy by our American ship repair yards," continued Mr. Smith.

"In a global war which ranges from Iceland to the jungles of the Solomons, transportation is attaining an ever increasing importance. A million men have been transported to sixty-odd bases and they must be continually supplied. A badly damaged ship quickly repaired becomes as much a serviceable unit as a new ship delivered.

"Axis reports of irreparable damage done by their submarines and aircraft lose much of their impact because of the miracles which are performed by our American ship repair yards almost as a matter of routine." The heavy volume of work created has forced the shipbuilding industry to concentrate fully 15 per cent of our expanding payrolls on the pressing work of ship repairing, it was pointed out.

"Our yards have converted hundreds of ocean-going ships to transports and for other purposes. A luxury liner was converted in a flat seven days; another ship needed to be lengthened and it was cut in half and the lengthening units installed. Repair yards also arm our merchant ships against submarines and magnetic mines." Mr. Smith concluded: "The United Nations may have to depend exclusively on American repair yards. We will meet that challenge, too, if it comes."

New Contracts for Washington Boat Yard

The Washington Boat Yard at Seattle, Washington, has recently received contracts from the Navy and the Maritime Commission. For the Navy, Department of Ships, they will build ten 45-foot aircraft rescue boats. Thirty-four Monomoy drill boats will be built for the Maritime Commission. The yard has been building 50-foot Coast Guard Patrol boats.

Standard S. B. Corp. To Build Repair Yard

The Standard Shipbuilding Corp., San Pedro, California, is now building adequate facilities for a repair yard, suitable to handle and repair vessels up to 250 feet in length.

In addition to this part of the yard, which will be in operation within the near future, the organization is now working on a contract of eight 150-foot, ocean-going, wooden tugs for the Maritime Commission.

Florida's First Liberty

Florida joined the list of states launching Liberty ships when the J. A. Jones Construction Company, Inc. launched the E. Kirby Smith, the first Liberty ship to slide down the ways at Wainwright Yard, Panama City, Florida, December 30, 1942, the Mari-

time Commission announced.

Named after one of Florida's outstanding Confederate cavalry officers, the new vessel was launched six months after her keel was laid at the new Panama City yard. The contract for the construction of the E. Kirby Smith and 32 other Liberty ships was let by the Maritime Commission last April. Work on facilities at the new site was begun immediately and six new ways have been completed.

106 Tug Bids

Ranging from \$31,000 to \$250,000 for each vessel, 106 bids from shipbuilding and lumber companies for the construction of wood tugs were announced on December 14 by the Maritime Commission.

Builders in 21 states on the East, West and Gulf Coast areas, as well as the Great Lakes, submitted their offers to construct the 05-foot vessels, which will be used as propelling units in connection with the Commission's wood barge program. The vessels, which are of the V2-M-AL1 design, will be constructed in groups of not more than six by a builder.

New York State led the country with a total of 15 bids. Washington and California came second with twelve each. Maine's builders were third with eight offers. Four bidders were from Oregon.

Bids were accepted under both clause "A" and clause "B"; i.e., either on a fixed lump-sum basis, or on an adjusted-price basis. Bids do not include costs for engines which will be supplied to successful bidders by the Maritime Commission.

Coastal Tanker Contracts

Contracts for the construction of 12 coastal tankers each were awarded on December 23 to the Marine Maintenance Corporation, Bayonne, New Jersey, and Gray's Iron Works, Inc., Galveston, Texas. Both companies are now constructing this type of vessel for the Commission.

According to the terms of the contract, the tankers, which are

220 feet long and LOV deadweight tons, must be delivered into service by the end of 1948, each yard delivering its first vessel in June, 1943.

Federal Launches

A twin launching of the 10,000 ton cargo ships Santa Catalina and Santa Barbara on December 1 marked another effort to speed ship construction to win the war in the Kearny shipyard of the Federal Shipbuilding and Dry Dock Company.

First down the ways was the Santa Catalina, sponsored by Mrs. John W. Chapman, wife of the vice president of the Grace Line. The Santa Barbara, which quickly followed its sister ship into the water, was christened by Mrs. Daulton Mann, widow of the former executive vice president of the Grace Line.

Both ships are being built for the United States Maritime Commission, but are scheduled to be transferred upon completion to the Grace Line.

Named for the officer who was commanding the U.S.S. Maine when she was sunk in Havana harbor on February 15, 1898, starting the Spanish-American War, the destroyer U.S.S. Sigsbee was launched on December 7 at the Kearny yard of the Federal Shipbuilding and Dry Dock Company.

Champagne was broken over the warship's bow by Mrs. Anton Otto Fischer, of Woodstock, N.Y., daughter of the late Rear Admiral Charles Dwight Sigsbee.

Alabama Launches Two Tankers

The S.S. Birch Coulie, second of a group of twenty-one 680-ton tankers being built by the Alabama Dry Dock & Shipbuilding Co. for the United States Maritime Commission, was launched at Mobile November 29. Sponsor of the vessel was Mrs. G. N. Mc-Ilhenny, wife of the manager of ADDSCO's shipbuilding department, with Mrs. Stuart Johnson of New Orleans, wife of a regional official of the Maritime Commission, as co-sponsor.

The S.S. Buttalo Wallow, the third tanker, was launched by the Mahama Dry Dock & Shipbuilding Company, December 20, at a ceremony in which the company was presented a gold star production award by the United States Maritime Commission.

L. R. Sanford, regional director of the Maritime Commission, said the award was for "work well done" and for "production of the type we like to see and must have to successfully prosecute this war." The Alabama Company was awarded the Maritime Commission's "M" flag October 25.

Miss Lucy Campbell, daughter of B. F. Campbell, vice president of ADDSCO, and Mrs. Campbell, christened the ship, while Miss Julie Gaillard of Mobile, as cosponsor, cut the rope that sent the vessel down the launching way.

Navy Launchings

December 5, the U.S.S. Heermann, a destroyer, slid down the ways at the Bethlehem Shipyard in San Francisco and was sponsored by Mrs. Edmund Beale Briggs, wife of Lieutenant E. B. Briggs of the Coast Guard, whose great-grandfather Heermann, for whom the new destroyer is named, was a surgeon in the early days of the United States Navy.

December 23, without the ceremony and fanfare usually a part of launching ceremonies, the USS Reno, a light cruiser, slid into the waters of San Francisco Bay at the Bethlehem Shipyards. Following the custom of honoring the city for which the ship is named, the Reno was sponsored by Mrs. August Frohlich, wife of the Mayor of Reno.

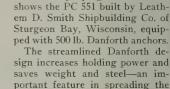
Not as large but nevertheless an important ship for the Navy, the USS Molala, a fleet tug was launched at the same hour from the yards of the United Engineering Company in Alameda. The sponsor was Mrs. Charles Carroll McGettigan, niece of Captain Powers Symington, USN (ret) President of the General Court Martial of the Twelfth Naval District.



ANCHOR POPULAR WITH SERVICES

and Coast Guard.

DAN FORTH ANCHOR on PC 551.



sign increases holding power and saves weight and steel-an important feature in spreading the supply of this critical war mate-

Danforth anchor is standard equipment on more than 60 types of air and surface craft in the service of the U. S. Navy, Army

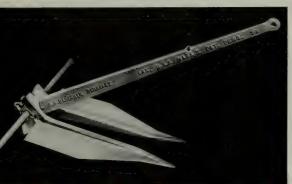
Among the many new vessels

now being equipped with Danforth anchors are trim PC boats. The accompanying illustration

HE POPULAR

Landing craft, including the heaviest invasion barges, are also equipped with this anchor. Anchors so used are subject to the severest test as they steady these craft through the surf and are used to haul the barges back off the beaches.

Other types of U.S. craft using Danforth anchors include motor torpedo boats, Martin and Consolidated patrol bombers and almost all the lighter naval and Coast Guard craft.



CLOSE-UP of Danforth anchor.

MYERS BILGE PUMP

Low first cost and low upkeep are claimed for this Myers pump, which is available with self-priming case or volute case. Operating speed is any speed up to 3800 rpm and lower than 3000 rpm with proper pulley sizes.

Double ball bearings together with open impeller design give smooth, efficient, long-life service, even when pumping dirty water.

No lubrication is required as the two ball bearings used are grease packed and sealed for life of bearing. The bearing housing is fitted with felt seals to prevent entry of water or dirt.

It is designed to be belt driven direct from main boat engine or from any auxiliary drive that may be available and is constructed to stand continuous operation with the engine.

The self-priming pump is especially suitable for pumping bilge water aboard small boats where continuous trouble-free service is vital and where no auxiliary circulating water is available for priming.

The pump, with volute case instead of self-priming case, is recommended for use where circulating water is available from main boat engine and where pump is driven direct from main engine.

Part of circulating water from the engine may be piped to 1/4" tapping on pump suction and used to circulate through pump all the time it is in operation making the pump self-priming without the use of foot or check valves.



Volute Case Pump



Self-Priming Pump

Either pump is available in all commercial bronze; commercial bronze and Monel shaft; or Navy bronze, Monel shaft and with Navy inspection.

Made by The F. E. Myers & Bro. Co., Ashland, Ohio.

NECROLOGY

Shipping Executive

Norman Owens Pedrick, president of the Mississippi Shipping Company of New Orleans, died December 10 of heart disease, aged 67. He was born in Portsmouth, Virginia, and went to New Orleans in 1902, where he became a financier and industrialist of considerable note. In 1919 he was associated in the founding of the Mississippi Steamship Company, which established two-way service from New Orleans to South American ports.

Norman Pedrick was a director in numerous transportation and industrial enterprises and will be much missed in New Orleans

business circles.

Great Forge Expert

Edwin (Eddie)) Forrest, one of the most colorful characters in the development of the steel industry on the Pacific Coast, died at his home in San Francisco, on January 5. During his career, he was connected with many Pacific Coast steel companies.

Mr. Forrest established, owned and operated the Edwin Forrest Forge Company in Oakland, and during World War I operated there one of the largest forge presses in the United States, supplying many of the forgings required for the great shipbuilding program then under way.

In more recent years, he has represented at San Francisco the Erie Forge and Steel Company of Erie, Pa. He was an active member in the Mariners Club and other social organizations and a Knights Templar, a Scottish Rite Mason, and an Odd Fellow.

Mr. Forrest is survived by his widow, two sons, Prosper and Llewellyn Forrest, and three grandchildren.

Engine Builder

Allan David Skinner, 68, president of Skinner Engine Company, Erie, Pennsylvania, died December 4 after a brief illness.

Forty seven years ago, he entered the employ of the company; and, in 1924, upon the death of his father, the late LeGrand Skinner, founder of the company which bears his name, he succeeded to the presidency. It was very largely due to his ability in the fields of designing, selling and manufacturing that Skinner Engine Company has assumed its present leadership in the manufacture of Uniflo stationary and marine reciprocating steam engines in the United States.

The crowning event in his lifelong connection with the steam engine industry was the receipt last August of the Army-Navy "E" Award.

Mr. Skinner is survived by Mrs. Skinner, the former Florence Harington; two children, a daughter, Allene (Mrs. Robert Brooks), and a son, J. LeGrand, who will continue as active head of the company; also two granddaughters, Mary Lee Skinner and Karen Brooks.

Principal Inspector

M. Visintini, Principal Machinery Inspector at the Moore Dry Dock Company for the U. S. Maritime Commission, died November 17 at the Providence Hospital in Oakland, aged 55.



M. VISINTINI, Principal Machinery Inspector at Moore's for U. S. M. C.



ALLAN DAVID SKINNER

Born June 17, 1887, at Trieste, Italy, Mr. Visintini graduated in Mechanical Engineering from the Trieste University. He came to America in 1911 and worked in the drafting departments of various Atlantic Coast shipyards and of the Shipping Board at Washington.

He took a fling at engine room operation on shipboard from 1921-1925, and achieved chief's licenses for any tonnage for both steamers and motorships.

In 1939 he joined the Maritime Commission, and in 1940 became the first resident inspector on the Pacific Coast for the U. S. Maritime Commission.

Prominent
Truck Manufacturer

E. C. Fink, president and chairman of the board of Mack Trucks, Inc., died in New York City on January 1 following a heart attack suffered a few days earlier. He was 62 years old.

A pioneer in the truck industry, Mr. Fink had been an officer of the company since its organization in 1911. He was elected president and chairman of the board in January, 1937, succeeding the late Charles Hayden.

As head of Mack Trucks during the present war, he was the guiding hand in the design of the specialized motor trucks Mack is supplying the armed forces, and in the development of the huge Mackbuilt transmissions, now used in many of the Army's 30-ton tanks. MARINE DEPARTMENT
A E T N A I N S U R A N C E C O.
Q U E E N I N S U R A N C E C O.
MARITIME INSURANCE CO., LTD.
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WARSHIPOPENCARGO NEW POLICY

HE WAR SHIPPING Administration, after consultations with the Advisory Underwriting Committee of the American Institute of Marine Underwriters, has announced a number of changes in the WARSHIPOPENCARGO Policy, which will make that policy conform more closely to policies issued by commercial underwriters. The changes were made effective by the Publication of General Order No. 6, Supplement No. 8 in the Federal Register on January 12, 1943.

The policy as originally written covered only shipments for the account of and at the risk of the assured. The policy as extended by Supplement No. 8 will also cover merchandise: Shipped by, to or at the direction of the assured, and sold by him prior to loading on board the overseas vessel on terms requiring him to provide war-risk insurance to the port of discharge; Shipped by, to or at the direction of the assured and sold by him prior to loading on board overseas vessel, and with respect to which written or cabled instructions to provide war-risk insurance to the port of discharge have been received by the assured from the purchaser prior to loading of the goods on board the overseas vessel; and Shipped by the assured and sold by the assured subsequent to the attachment of risk under the policy on terms requiring the assured to provide war-risk insurance to the port of discharge.

The War Shipping Administration had previously provided endorsements to take care of the above situations but for the convenience of policy holders, this protection is now made automatic.

With regard to goods sold by the assured prior to loading on board the overseas vessel, Supplement No. 8 provides that in the event of loss the assured shall be required to file an affidavit to the effect that the amount claimed does not exceed the actual bona fide sales price, less all discounts, plus marine insurance and transportation costs actually incurred with respect to the insured venture plus the war-risk premium payable under the policy if such items are not included in the sales price. The supplement further provides that on such shipments, claims shall be filed by the assured unless otherwise permitted by the War Shipping Administration for good cause shown.

The provision for the use of an affidavit limiting a claim to the bona fide sale price plus other charges is not applicable on shipments made for the account and at the risk of a branch, subsidiary or affiliate of the assured.

The War Shipping Administration in Supplement No. 8 also has broadened the regulations regarding the use of Standard Optional Endorsement No. XII, which endorsement provides for an affidavit limiting the amount collectible in the event of loss to the actual bona fide pecuniary loss to the assured. Until the issuance of this supplement, an assured if he elects to take this particular endorsement, has been required to have the endorsement apply to all shipments coming within the scope of his policy. The new regulations will permit the assured to have his policy endorsed to provide for the use of the pecuniary loss clause:

on all shipments under the policy or, on all outward shipments or, on all inward shipments,

and also on named commodities. However, where the assured elects to have this endorsement apply to named commodities, he may not change to a different basis on those commodities except on ninety (90) days' notice.

Considerable difficulty has arisen because of the fact that closing reports have not been filed by policy holders within the time required by the policy and, accordingly, provisions have been made in the new supplement that when the closing report is not filed by the 25th day of the month, as required by the terms of the policy, a breach of the policy terms and conditions has been made by the assured, and the policy automatically ceases to insure shipments which would otherwise have attached after the expiration of fifteen (15) days following the due date of the closing report.

Further provisions have been made, however, that if within the stated fifteen (15) days' period, the closing report, as required by the terms of the policy, is filed with the underwriting agent, and a reinstatement fee of \$25.00 is paid by cashier's check, or certified check, or money order, payable to the order of the Treasurer of the United States, together with amount of premium due, if any, cancellation shall not be effective.

Provisions have also been made for the elimination of the requirements of Provisional Reports under WARSHIPOPENCARGO Policies. The necessity for these reports was temporarily suspended on December 15, 1942, and that suspension has now been made part of the policy.

A clause has also been added to the policy, embodying existing regulations as to the nationality or residence of a WARSHIP-OPENCARGO policy holder.

Running LIGHTS



THE U. S. MERCHANT MARINE received its third group of officers in one year from the California Maritime Academy when the above group of men graduated December 19, 1942.

Officers for the Merchant Marine

Graduation exercises for the third class to be graduated in 1942 at the California Maritime Academy were held December 19 at the Marine Exchange Building at 450 California Street, San Francisco. Upon completion of a 16-month shortened training course, these men received ensign commissions as deck and engineering officers in the U. S. Merchant Marine.

Capt. Claude B. Mayo, U.S.N. Ret., Superintendent of the Academy, presided at the exercises. Among the speakers were Lt. Comdr. Oueen: Hugh Gallagher, Operating Manager of the Matson Lines: Dr. Joel Burkman, Assistant Director of the Dept. of Education: Ltd. Comdr. C. M. Drury, U.S.N.R., Chaplain; Guy Needham, War Shipping Administration: Hon. Jesse W. Curtis, Justice of the Supreme Court of California: A. E. Stow, American-Hawaiian Steamship Company; A. B. Poole, American President Lines; K. H. Donovin, Moore-McCormack Lines: James K. Fiske, State Adjutant, American Legion, and Jos. A. Moore, Moore Dry Dock Company.

Maritime "M" For Eastern Firm

Having converted its entire plant from the peace-time production of refining equipment for the petroleum industry, the Dunkirk, New York, plant of the American Locomotive Company has successfully taken up its new wartime role of building king-posts and masts for Liberty Ships.

In recognition of its outstanding performance, this 73-year-old firm was presented with the U. S. Maritime Commission's "M" pennant and labor merit badges for the entire employee personnel by Col. Willard F. Rockwell, Director of the Commission's Production Division, at ceremonies held at the plant on December 18, 1942, at Dunkirk, New York. Among those participating were Mr. Sylwin Strakacz, Minister Plenipotentiary and Consul General of Poland.



The United Seaman's Service

Excerpts from a speech by Captain Edward Macauley before the Propeller Club, Port of San Francisco, December 18, 1942, outlining the need and aims of the United Seaman's Service:

The dramatic military events of the past month are pregnant with meaning for all of us who understand the role of the merchant marine in safeguarding our Nation's liberty and preparing her to play her rightful role in the postwar world.

A deep sense of pride has filled the entire American people as they have realized the significance of the major victories in North Africa and the Solomon Islands.

But they do not fully understand the role of life-and-death import which the merchant marine played in both these actions. It is safe to say that the general public does not yet think in terms of Admiral A. T. Mahan's celebrated formula: "Sea power equals Naval

vessels plus bases plus the merchant marine."

Are we prepared to go the whole way, to do everything which is necessary to provide America with a merchant marine which will enable her to win the war today and to become the major sea power in the post-war years for which her resources and her industrial genius have prepared her?

We know that 2,300 or more ships are due off the ways by the end of 1943. We know that approximately 25,000 more officers and 100,000 more men will be required to sail them. We know the courage with which seasoned mariners are doing their duty today in the face of ever-present dangers and frequent tragedies.

But have we overlooked one very important thing: that merchant seamen are human beings, not robots conveniently attached to deck and engine and galley? Are we giving the necessary thought to the human needs, in health and social well-being, of the gallant fighters who take the stuff of victory from our factories to our fronts.

S.S. WILLIAM KENT, Liberty ship, just christened by the 16-year-old twin aranddaughters of the late Marin County Congressman, the first time in history when twins christened a Liberty ship, each wielding a bottle of California champagne. The launching took place at the Marinship yard in Sausalito. Left to right are Reverend John Compton Leffler, Rector of St. Luke's Episcopal Church, San Francisco; Thomas T. Kent, who helped build the ship and who is the son of the late philanthropist and statesman; Nancy Kent; Mrs. William Kent, widow; Marty Kent; Jordan L. Martinelli, city attorney of Sausalito, and Mrs. Thomas T. Kent.

The very creation of such an organization as United Seamen's Service indicates that our government, and leaders among the shipbuilders, the shipowners and operators, and the maritime unions, understand the importance of this human side of the merchant marine. They know that today's and tomorrow's needs must be met by a service which, basing itself on everything good which has thus far been accomplished by the seamen's unions, by all existing agencies for the welfare of seamen, and by the Maritime Commission and War Shipping Administration, moves forward on a scale hitherto unknown.

Today, as we meet beside Pacific waters, we know that our West Coast has become one of the great shipbuilding and ship-operating centers of the world.

The question is: Will there be a human bottleneck between the West Coast's possibilities and the West Coast's performance in the unfolding of the American Merchant Marine? Or will we realize that the seaman himself — his health and his welfare—stands at the center of the picture?

In addition to being heroes, these men are flesh-and-blood. If



MRS. W. P. MANUELL is all ready to christen the S.S. Sea Mink at this launching at the Western Pipe & Steel Company, South San Francisco, California. W. P. Manuell, Principal Machinery Inspector, stands by to offer advice.

PACIFIC MARINE REVIEW

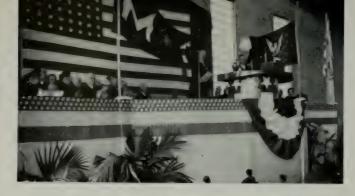
they are to be able to render maximum service during the war, if they are to be attracted to continued service at sea in the years to come, they must see some reasonable measure of well-being and security for themselves and their families.

The United Seamen's Service was launched early in September to meet just that need. A cooperative venture of shipbuilders, shipowners, ship operators and the seamen's unions, it has the close cooperation and support of the U. S. Maritime Commission and the War Shipping Administration. Behind these parties of the first part, so to speak, stand the American people who daily achieve greater understanding of the role of the merchant marine in our national life.

Within a few short months the United Seamen's Service has launched six splendid units—three rest centers for seamen recuperating from torpedoings and other encounters with the enemy at sea: two town clubs in New York and Philadelphia, and the first overseas facility, a hotel and club in Glasgow.

Encouraging as this is, it represents only a beginning. Adequate and appropriate service facilities must be established in every major American port, and in every major United Nations port the world over. Only in this way can we demonstrate that our interest in the well-being of our merchant seamen is something far greater than mere sentiment; that it is a determination to do a real job, to do it promptly and thoroughly.

This trio of shipbuilding experts are among the top yard bosses at Marinship in Sausalito. Left is Jack Hardie, shipwright superintendent and a veteran of 48 years in the shipbuilding industry. Harry Pharis, center, is welding superintendent. He's a lanky Texan with a mighty good word to say for the hundreds of women welders who work under his jurisdiction. Right is John Anderton, who is Marinship's production engineer. He's forgotten more about building ships than most fellows know.



Ceremonies marking the presentation of the U. S. Maritime Commission "M" pennant, the Victory Fleet Flag, to the A. P. Green Fire Brick Company. This is the first Maritime Award in the state of Missouri and the first in the entire fireclay industry.

First Maritime "M" In Missouri

The first U. S. Maritime "M" Pennant in the entire fireclay industry and the first in the State of Missouri was awarded Tuesday, November 10, to the A. P. Green Fire Brick Company of Mexico, Missouri. Labor Merit insignia were presented to all of the 1475 employees. The presentation was made by Colonel Willard F. Rockwell, Director of Production for the Maritime Commission. This award, which is the highest of all Maritime Commission honors. was awarded to the Green Company for outstanding achievement in the production of fire brick and refractory materials used for lining the boilers of Liberty ships and essential to the shipbuilding program of the United States Maritime Commission.

"You are in a real sense making ships in Missouri," Colonel Rockwell told the employees in making

the presentation. "The work you men and women of this company are doing is of great importance to our shipbuilding program. You have been manufacturing fire brick and refractory products that have been a part of every Liberty ship constructed in Maritime shipyards. You have been supplying this material, thereby making it possible for other men and women and other industrial plants to break their records of production and meet rigid delivery schedules. During the past thirteen months, our shipyards have delivered into service 570 complete vessels - a record unequaled in world history. During the single month of October, they delivered 81 completed vessels, which approximates the entire tonnage delivered by American vards in the full year of 1941. But, as the spread of war calls for more and more of our soldiers, our war materials of all kinds, so will the demand for ships constantly increase."





Harry Hilp, left, and Frank Barrett, principals of Barrett and Hilp, general contractors, are proud of the "E" flag, symbol of the Army-Navy Construction Award, which they received for the speed, efficiency and cooperation of their work on more than 150 projects at Mare Island Navy Yard.

(Official U. S. Navy Photograph)

"Speed, Efficiency and Cooperation"

Past, present and future could have been the key words to designate three activities which made the December 5 week-end a whirlwind of activity for the organization and working personnel of Barrett and Hilp, general contractors, of San Francisco.

Mare Island Navy Yard was the setting for the formal presentation of the Army-Navy Construction Award to the firm principals Saturday noon for recognition of past performance.

Mr. Barrett and Mr. Hilp were hosts to 2000 employees at an Achievement Celebration party in the Scottish Rite Auditorium, San Francisco, that evening.

And Monday noon saw the laying of the first reinforcing steel rods in the hull of the first of 26 concrete barges being built at Belair Shipyard, an important activity for the future.

ARMY

As an added attraction, a War Bond drive was launched during the Belair program. Superintendents and foremen pledged more than \$20,000 worth of bond purchases during lunch and Barrett pledged the management to match, dollar-for-dollar, the combined purchases of all Belair employees.

Rear Admiral W. L. Friedell made the official presentation of the "E" flag at Mare Island and both Barrett and Hilp made brief talks of appreciation and acceptance. Colonel Stuart M. Hall, for the Army, presented employee pins to Carpenter O. S. Hughes, representing the employees. The Mare Island Navy band furnished the music and the program was presented from a temporary platform, built specially for the occasion.

This award was prized particularly, because few, if any, general contractors have received such an honor and it is the unanimous resolve of the entire personnel to add a star to the "E" flag every six months—as fast as they are available—by a continuation of "speed, efficiency and cooperation."

Barrett and Hilp recently completed the construction of 5000 demountable houses in 180 days at Portsmouth, Virginia. This was the largest housing project ever designed and it was completed in record time. It is housing workers at the Norfolk Navy Yard.

Other housing developments have been completed by Barrett and Hilp in Missouri and on the West Coast. More recently they have received two new contracts, one for 1000 war apartments costing \$1,800,000 in Vallejo, and the other being for 500 dormitory units, costing \$500,000 at Hunters Point.

Participants in Army-Navy award program at Mare Island. Left to right: Lt. Cdr. A. J. Wagner USNR; Lt. Cdr. W. M. Johnson USNR; Capt. George D. Wetsel USN; Ensign B. L. Raffin USNR; Lieut. E. E. Clarridge USNR; Lt. Cdr. F. W. Phipps USNR; Rear Admiral W. L. Friedell; Lieut. C. H. Darby USNR; Col. Stuart M. Hall; Cdr. E. W. Andrews USN ret.; Harry Hilp; O. F. Hughes, employee representative; Frank Barrett. (Official V. S. Navy Photograph)

"We Will Not Fail You; We'll Build Your Ships!"

Builder of fighting ships for the Navy, the most recent of which have been the cruiser U.S.S. "Oak land" and the destroyer U.S.S. "Heermann," the San Francisco Yard of Bethlehem Steel Company was awarded the Army-Navy "E" at ceremonies held at 4:00 P.M. Friday, December 11. Fifteen thousand workers, paus ing between shifts, heard Vice Admiral John Wills Greenslade, Lt. Col. John R. Reilly, Governorelect Earl Warren, and A. S. Gunn, General Manager of the Bethlehem Shipyard.

General Manager Gunn accepted the award for the company with these words: "This is a high honor that the representatives of our fighting forces have bestowed upon us. It means that we have been working together with a fine spirit of cooperation. It means that we have been building ships better and faster than ever before. And it means that our fighting forces know they can depend on us to produce the ships they need so urgently.

"In accepting this award we are, by inference, promising to continue this good work. We must do more than promise—we must perform. More and more ships must be built in shorter and shorter time.

"It is not the American way to leave unfinished the kind of job we're working on now. We will drive through to victory. And so, speaking as one voice for all the people of this yard, I say to the Navy and the Army . . . We will not fail you. We'll build your ships!"

This yard is one of the first to cooperate in the complete fitting out of ships before they are turned over to the Navy, according to Admiral Greenslade, thus speeding by weeks the delivery of vessels to the fleet.

Other destroyers from this yard, Admiral Greenslade revealed in



Above: Mr. A. S. Gunn, General Manager of the San Francisco Yard of the Bethlehem Steel Company receiving the Army-Navy "E" Award from Vice-Admiral John Wills Greenslade.

his address to the workers, have already proved themselves in battle in the Coral Sea and at Midway and in the fight now being waged in the Solomons, and have "delivered crushing blows to our enemies in the Atlantic and in the Pacific."

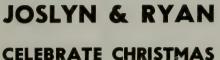
Governor-elect Earl Warren congratulated the workers upon their achievement, saying, "Your accomplishment emphasizes the fact that the job abroad and at home is but one job—that what we do here is reflected in the outcome of battles."

Below: Admiral John Wills Greenslade addresses 15,000 Bethlehem Steel workers at "E" ceremonies.





THE HIGH LIGHT of the event was the presentation of an American Flag from the J&R staff, represented by Marie Quartararo, to Messrs. Joslyn (to her right) and Ryan (to her left) while Capt. Sinton of the U.S.S. Chandeleur watches at the left.



P. L. Joslyn and M. J. Ryan were genial hosts to their entire organization at a Christmas party on Thursday, December 24, at the Colonial Room of the St. Francis Hotel in San Francisco.

George V. Rulofson, chairman of the committee, also served as Master of Ceremonies and conducted the program in his usual efficient and affable manner. The committee members included Lowell Bowen, Bill Lewis, Sam Gazzano, Carl Lindberg, C. R. Sessions, Elinor Criswell, Maude Merritt and Marie Quartararo.



Distinguished guests were seated at the festively decorated head table. From the left were W. Feldcamp, Chief Hull Draftsman at Bethlehem Steel Co.; th. Comdr. R. E. Garrels, Asst. Supervisor of Shipbuilding, USN, at Moore Dry Dock Co., Oakland; Capt. W. Sinton of the USS Chandeleur, (seaplane tender designed by J&R); Host P. L. Joslyn; master of ceremonies George V. Rulofson; Committee Member Bill Lewis, (standing); Host M. J. Ryan; W. Griffin, U. S. Maritime Commission Inspector at Western Pipe & Steel Co.; C. M. Loring, Office of Supervisor of Shipbuilding, USN, at Bethlehem Steel Co.; F. J. Swaney, Chief Engineer, at Western Pipe & Steel Co.; Frank Ott, Design Superintendent, at office of Assistant Industrial Manager, USN at Ferry Bidg., San Francisco; and W. H. Ellison, Associated Consultant Structural Engineer.

All the entertainment was furnished by J&R employees. The "Bilge & Ballast Quartet," consisting of Maurice Bertie, Bill Lewis, Carl Hague and Jack Hare were under the direction of Bill Lewis and were ably accompanied by Ellis Anderson. The J&R Blues Singer, Barbara Hulburt, sang several solo selections, as did Carl Hague.

Employees presented a 4"/50 cal. shell case as a good-luck token

to Capt. Sinton of the USS Chandeleur. This particular shell case was a part of the last shot fired in a record-breaking Short Range Battle Practice that brought a United States Naval Reserve Cup to San Francisco.

Sam Gazzano was responsible for all the arrangements, and the colorful souvenir program was designed by Miss Marion Rich. The accompanying pictures show the prevailing good-fellowship.



Machinery-Equipment-Outfitting in 1942

(Continued from page 129)

THERMACOTE COVERGLASSES

These are the days of are welding. Welders are being trained by the thousands and everything pertaining to welding is being watched closely by labor and management alike to cut down costs, improve output, and render the process safer for the welder. Today's speed records prove this.

Principal among the safety measures are those protecting the eyes. Welders' standard helmets are equipped with a lens of dark glass to prevent eye injury from the bright glare of the electric arc. Over this lens is placed a coverglass so that the costly and now hard-to-get lens itself may be protected from injury due to contact with hot metal or due to collision with objects.

Ordinary coverglasses do not last very long and a busy shipyard uses them up at a tremendous rate. They become useless through hot metal splatter adhering to the glass, cracking it, or at least dimming out proper vision.

The Thermacote Co. of San Francisco and Los Angeles, after much research, has perfected a heat and moisture resistant coating, the same as used on Thermacote processed light bulbs, which, when processed on coverglasses, multiplies their useful life by ten to 15 times and renders them safer against rupture by heavy objects.

These glasses, marketed under the trade name of Thermacote coverglasses, are now being used to great production and economic advantage by the principal ship yards of California. The use of this glass shows very substantial savings in many ways, including: the direct cost of coverglasses; the man hours in welding operations; the cost of transportation; and the cost of accidents.

Thermacote successfully resists most of the heavy gobs of hot metal that ordinarily get through to break the costly colored lenses of the helmet and cause serious burns.

Thermacote coverglasses are shipped from the factory ready to install. Coated all over both sides and four edges, they are safe to handle, having no sharp glass edges. Welders like them and do better work.

Ship Chandlers' 50th Anniversary

Weeks, Howe, Emerson, pioneer ship chandlers of San Francisco, are celebrating this year their fiftieth anniversary of service to the merchant ships of San Francisco Bay.

This firm and its predecessor has been located on the first block of Market Street for more than fifty years. We reproduce herewith a bill dated 1856 made out on the invoice forms of A. Crawford and Co., San Francisco, which firm was succeeded by Weeks, Howe, Emerson over 50 years ago. It is

very interesting to note the charges on this old document, such as "Labor...\$7.00 per day," "Manila Rope...25 cts."

In the United States it is rather unusual for a firm to have existed for half a century engaged in the same business. In fact, only eight firms out of a thousand who were in existence fifty years back are in business today. Weeks, Howe, Emerson, however, have not only maintained themselves in business for more than 50 years, but have remained during that period on the same block of the same street in the same city, a record which we are sure is much less common. For over 50 years they did business on the first block of Market Street, San Francisco, and they are occupying a store in that

They are celebrating their golden anniversary at their own building, 255 Mission Street, San Francisco, just 2½ blocks from their Market Street store.

The active executive management of this firm comprises: S. F. Weeks, president; C. K. Howe, vice president; and F. W. Howe, treasurer.

They handle and stock a full line of ship chandlery items.



INVOICE OF A. Crawford & Co., predecessors of W e e k s, Howe, Emer-



MEEHANITE PROPELLER

Meehanite Approved For Ship Propellers

Increasing use of Meehanite for propellers, propeller blades, and propeller hubs is helping eliminate foundry delays created by shortages in the tin and copper necessary for the production of the manganese bronze usually specified for propellers.

Recently, the Maritime Commission specified Meehanite as a suitable metal for cargo vessel propellers, and a number of Meehanite foundries are now engaged in their production.

Manufactured by special processes which permit accurate control of the metal structure and predetermination of engineering properties, this metal provides the high tensile strength, adequate resistance to cavitation and erosion and good resistance to shock or impact that are so necessary in a seagoing propeller.

Illustrated is a single-unit, tenton propeller, cast by Washington Iron Works, Seattle, Washington.

Mobile Units Speed Welding in Shipyard

Mobile units for supplying direct current for arc welding operations on steel ships are being used with highly satisfactory results at a West Coast shipyard. Shown here are two of the units, each consisting of six General Electric single-operator welding sets mounted in roofed steel

frames, the tops of which are equipped with suitable projections for receiving the lifting hooks of a crane.

With this arrangement, the motor-generators are protected from the weather, and the units are easily picked up by a crane and moved to wherever they are required, thus materially speeding the shipyard's welding operations.

Arc Control Stations For Welding Generators

Greater welding output per machine, better control by the operator, and improved welds on thin gage metal. All of these are obtainable through the use of the Honey Bee Arc Control Station, recently developed by Wilson Welder and Metals Company of New York.

These arc control stations are made in capacities of 75 amperes and 150 amperes. They are an auxiliary electric device, connected in series with the welding circuit of any constant potential arc welding generator. Most conventional drooping voltage generators can be converted quickly and easily to constant potential. For this purpose, Wilson supplies a quick-change switch mounted on the generator. A portable switch held in the operator's hand gives the operator remote control of the welding current within predetermined limits. This switch may be combined with the electrode holder, if desired.

When two or more arc control stations are hooked up to a single generator, a like number of welding arcs can be operated simultaneously. Each operator can regulate his own current and weld as he sees fit without affecting the others in any way. One of the important features of this new arrangement is the remote control of the arc when the operator reaches the end of a bead, thereby enabling him to greatly improve the quality of the weld deposit at the center. This is accomplished by gradually reducing the current which, in turn, reduces the heat and avoids porous, cracked craters and inclusions. Each operator has his choice of two methods of control:

(1) He can set his Honey Bee to deliver a definite current at the arc and weld steadily at that setting.

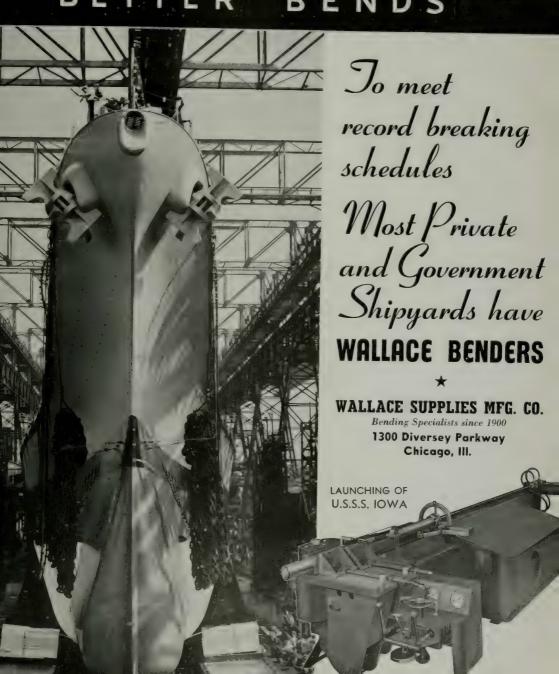
(2) He can use the hand switch to vary the current without breaking the arc. This enables him to start his arc on cold metal with a maximum current (hot arc) and to reduce the current as the work warms up.

Using two 75-ampere arc control stations, a 200-ampere generator can serve two operators instead of one. The result is greater production. Higher efficiency and a better load factor also result because the generator is operating nearer to its rated capacity at all times. Similarly, a single 400-ampere generator can be made to

THREE WILSON
"HONEY BEE" arc
control stations
attached to a Wilson Hornet welder.



WALLACE BETTER BENDS



serve five to six 75-ampere stations, or three to four of the 150-ampere stations. Each operator can draw precisely the amount of current he wants (up to the capacity of his station) at all times, regardless of what current the other welders are drawing.

McNab of Bridgeport, Inc.

The name Alexander McNab has long been familiar to the merchant marine and the Navy of the United States. This ingenious Scotsman devised many instruments and fittings to aid communication between the bridge and the engine room, to facilitate the taking of necessary records of performance, and to test the properties of materials used. The organization which he built up is now known as McNab of Bridgeport. Inc., and the technicians and mechanics of the plant at Bridgeport, Connecticut, are 100 per cent busy on the big job of helping win the war by supplying these products to the shipbuilding industry.

This is true not only as regards. American shipyards, but also in regard to Canadian shipyards. For instance, this plant has supplied the entire requirements of the Royal Canadian Navy on their extensive commitments of corvettes and algerines.

The equipment that McNab has supplied for these ships includes: mechanical bridge-engine room telegraphs; mechanical engine-room-to-stoke-hole telegraphs; latest type counter-tachometers; and salinity indicators especially designed to meet the British Admiralty requirements for operation on direct current.

Drill Fixture Saves Day Per Week

From 24 to 32 hours per week are being saved with a device developed to speed the drilling of marine gear casings at one of General Electric's major works.

The device, a universal indexing trunnion fixture, permits positioning the casings for drilling at any angle in a full circle and at any plane. In other words, it allows

rotation of the work in the manner of both the merry-go-round and the Ferris wheel.

About 110 holes must be drilled, tapped, or spot-faced in each of the casings, which vary in weight from 1000 to 2000 pounds. Before the trunnion fixture was developed, a crane had to be summoned to reposition the casing after each surface was drilled. This meant that each piece of work had to be set up at least six times.

Now, work is set up just once on a table which can be turned completely around in either direction with no more effort than is needed to push a revolving door. With the table locked in the desired position, the casing can be electrically rotated end over end to expose any portion of its sides or bottom to the drill. This movement is controlled by push button, and rotation in either direction through a 360-degree circle is possible.

Navy "E" for Bolts and Nuts

The awarding of the Army-Navy "E" to the H. M. Harper Company, Chicago, December 7, 1942, turns the spotlight on a concern which has had a spectacular growth . . . typically American, yet unique in many aspects.

In 1923 this was a "one-man" organization. By 1925 there were half a dozen employees. Today it is a sizable modern concern occupying two large buildings and employing over 275 people. Every day it now ships more than the 1925 volume. In the interim, there have been ten different major expansions.

One of the unique phases of this concern and its history is the product . . . namely bolts and nuts made of brass, bronze, copper, Everdur, Monel, and stainless steel. These products have the property of resisting rust, corrosion, certain chemical compounds, super-heated steam and numerous other adverse conditions.

These properties make Harper fastenings particularly suited for Navy and maritime use. They are

being used today on sub-chasers, cutters, crash boats, mine sweepers, landing barges, merchant ships and other craft. Ocean salt, arctic sub-cold and tropic sweat do not phase these tough fastenings

Another factor which has contributed to the growth of the H. M. Harper Company is the fact that in addition to manufacturing standard and special fastenings, it maintains huge stocks of not only the common types of bolts, nuts, screws, washers and rivets, but numerous special and hard-to-get items . . . a total of 4320 stock items. In addition, the company maintains and operates an extensive special order department equipped with special machinery, tools, taps and dies for the production of special fastenings according to specifications.

New Rustproof Compound

The problem of rustproofing steel plates, shapes, deck equipment and machinery so that it is protected from the time it is manufactured up to the time it is assembled as part of a new ship, has been solved with the new nonhardening Texaco Rustproof Compound, manufactured by The Texas Company. This material comes in two grades, one suitable for cold application and one suitable for dipping or spraying at 150-175 degrees F. The light material for cold application can also be obtained in a black color.

Complete protection against rusting, even though the steel protected is exposed to the weather for several months, is obtained at a low cost.

Texaco Rustproof Compound can be removed by wiping with a cloth saturated in any petroleum solvent, if this is desirable, at the time of installing the equipment.

This compound is suitable for use on various deck equipment such as davits, winches, hoisting equipment, ventilators, refrigerator cars and deck machinery after the ship is in operation, wherever non-hardening rustproofing is suitable.

Much of the equipment used in shipyards needs the preservative properties of these products. For example, the steel of drydocks, cotterdams and cranes can be kept free of rust for long periods by a single application. Structural steel and shapes in buildings can be similarly preserved.

Glass-Insulated Flexible Heating Element

Available in any length, by the inch, foot or yard, a low-power flexible heating element now finds many uses, particularly in very limited space. Known as the Glasohm, and also widely used as a flexible power resistor, this product is made by Clarostat Mfg. Co., Inc., 285-7 N. 6th St., Brooklyn, N. Y.

In the Glasohm construction, the resistance wire is wound on a fibre-glass core and is protected by a fibre-glass braided covering. The fibre-glass while providing the desirable properties of unbreakable and virtually indestructible glass, is almost as flexible as silk, so that the unit can be readily bent and compacted to fit snugly about parts to be heated, or again jammed into very tight spots, in either case providing an efficient heating means. Typical Glasohm heating elements range from a few inches to several feet in length. They can be made to any required length and provided with any type terminals. Wattage ratings are from 1 to 4 watts per body inch depending on the application. Operating temperatures up to 750° F.

Glasohm heating elements are now found in electric soldering irons, electric pencils, curling irons, water immersion heaters, and other low-power appliances; also in temperature - controlled ovens for oscillating radio crystals, the heating of aviation and marine instruments, localized heat for chemical apparatus and laboratory equipment, and similar applications.

CELLOPHANE BUBBLES FOR MANY WAR USES

SLEEPING ON MR air wrapped in tiny cellophane packages—approaches realization.

For chemists have accomplished the feat of trapping air in a continuous stream of cellophane bubbles. The resiliency and buoyancy of the resulting product open up a large field of interesting possibilities for its application.

The material, known as "Bubblil," has been developed by E. I. du Pont de Nemours & Co., whose Rayon Division is now manufacturing it in its Tennessee plant.

Tests already made show that the cellophane bubbles are fully as buoyant as the imported kapok. which comes from the seed pod of a Javanese tree. The new product has been considered for life-jackets of the type worn by U. S. Navy personnel, for which kapok heretofore has been used. "Bubblfil" has also been tried in the air compartments of lifeboats and life-rafts, where kapok is no longer being used because of the limited supply. It is also proposed for bridge pontoons, formerly filled with sponge rubber. If these air compartments are punctured by bullets or falling debris, the "Bubblfil" will keep the craft afloat. It has proven entirely satisfactory as a replacement for kapok in aviation tow targets, where buoyant material is used to keep the targets afloat when they are shot down.

Neither kapok nor cellulose bubbles can be classed as nonflammable, but the bubbles will not ignite when struck by tracer bullets. This gives "Bubblfil" a distinct advantage in military applications of many kinds. It is even possible to render "Bubblfil" flame-resistant by chemical treatment.

In life-jackets or life-rafts, "Bubblfil" has another advantage, for it loses buoyancy less rapidly than kapok upon prolonged im-

mersion in water. Tightly packed "Bubblfil" weighs about 1.5 pounds per cubic foot and will support 20 to 30 times its weight. Less than three pounds of the material will keep a heavy man's shoulders out of water. The bubbles cannot be broken by squeezing, nor will they rupture at the extremely low pressures of high altitudes. The bubbles remained intact in laboratory tests equivalent to an altitude of over 50,000 feet. The material also is quite stable to extremes in temperature. Heating for three days in air at temperatures above 200° F. and chilling to 28 degrees below zero Fahrenheit did not break the bubbles.

The material is so tough that its buoyancy was not affected when cheesecloth bags filled with it were subjected to an impact of 79 foot - pounds per square inch, equivalent to the impact sustained by a life-jacket worn by a 200-pound man upon striking the water after jumping from a height of 55 feet.

The resiliency of the cellophane bubbles, a property derived from the "springiness" of the entrapped air, has encouraged the Du Pont Company to study their suitability as a shock-absorbing material. Here "Bubblfil" might replace sponge rubber or so-called "cellular rubber," so very scarce today. The "Bubblfil" has been formed, by means of an adhesive material, into mats and cushions. These might be used for padding in airplanes or tanks. Bullets will not shatter them, leaving only small bules.

A third important characteristic of "Bubblfil" is its low thermal conductivity, that is, its insulating property. Air is a good insulator. "Bubblfil" is a mass of air cells, and can be used as a stuffing and as an insulating layer. Experimental fabrics have been woven,

with cotton thread running one direction and strands of "Bubblfil" in the other. This extremely lightweight material could be used as an interlining for coldweather jackets or flying suits, or several layers could be used as the filler for sleeping bags.

Chemically, "Bubblfil" is the same material as cellophane or rayon, namely, regenerated cellulose made by the viscose process.

The syrupy viscose material is extruded through a single spinneret hole, relatively large in size. A small amount of air is injected into it at regular intervals just as the filament is coagulated by the acid bath in which it is being spun.

The size and spacing of the bubbles, which are streamlined in shape, may be arranged according to choice. Much of the bubblestrand now being made has bubbles a little more than a quarter of an inch long, running three to the inch. A smaller size is also made. The material greatly resembles a string of transparent beads.

BOOK REVIEWS

The National Paint Dictionary, by Jeffrey R. Stewart, F.A.I.C.; 223 pages, 9"x12"; 250 illustrations; bound in green buckram with red and gold stampings; published by the Stewart Research Library, 1340 New York Ave., Washington, D.C. Price \$7.50.

This is the second edition of a standard work, containing definitions of the terms used, and pertinent information on the raw materials, methods of analysis, equipment and apparatus employed in the paint and allied industries. It should be on the bookshelves as a handy reference volume for all those engaged in the manufacture, distribution, and application of paint and coatings.

Jeffrey R. Stewart is a consulting and analytical chemist of national repute and is editor and publisher of the National Paint Bulletin. He was assisted in the compilation of this dictionary by Frances E. Spicer and Mary R. Brookfield. All the best references and many of the more prominent authorities were consulted and compared. The result is a reference book that should go far toward producing a more uniform, more effective, and more specific vocabulary for the paint technician and the paint mechanic.

Shipyard Fire Protection: A booklet bearing this title has recently been issued by the National Fire Protection Association, 60 Batterymarch St., Boston, Mass. after careful expert appraisal of the new fire hazards of the industry, and the protective measures needed. Ten pages; paper covers; 20 cents postpaid.

The protection of buildings, in which there is now constant movement of heavy equipment, and the increased fire hazards in the wider use of welding, together with



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methods of fire protection in metal processes and woodworking, in the launching ways, and finally in the protection of vessels while they are being fitted out, are all covered expertly and succinctly. This booklet should be of real value to the industry.

Questions and Answers for Marine Engineers; Book I—Boilers, by Captain H. C. Dinger, U.S.N. (ret.); 170 pages, 5" x8"; bound in green boards with blue stampings; published by Simmons Boardman Publishing Corporation, New York. Price \$1.00.

This is a very handy book, first of a series, compiled from the question and answer column appearing in the Marine Engineering and Shipping Review during the past 12 years. The volume is well indexed and should be a very good reference for operating engineers coming up for first papers, or raise of grade. It would also answer many questions coming up in emergencies at sea, and should settle many a ward room argument.

Glossary of Shipbuilding Terms, by Penflex; 75 pages, 4" x 6"; bound in blue board with white stampings; published by Pennsylvania Flexible Metallic Tubing Co., Philadelphia. Price 25c.

This is a very neat book of pocket size with a comprehensive glossary of terms used in shipbuilding, and some material on riveting and on welding. We do not agree with all the definitions, some of which simply confirm popular errors, such, for instance, defining the word knot as a nautical mile. However, this book is more free of such errors than a number of other marine glossaries published during the past year, and it is well worth its price.

Questions and Answers for Marine Diesel Engineers, edited by Louis R. Ford; 88 pages 5" x 8"; bound in brown boards with blue stampings; published by Diesel Publications, Inc., New York. Price \$1.00.

A compilation by the editor of Motorship and Diesel Boating of the questions and answers coming to him over the past few years. Many have been published in that magazine, but many for lack of space have not. This book will be very handy for motorship operating engineers and should be of great help to steam engineers going after a diesel ticket.

Oakite Compound No. 32. Due to the wartime necessity of turn ing out essential maintenance and repair work faster and easier on vessels of all types in shipbuilding yards and repair basins today, the newly revised and enlarged fourth edition of a 24 page manual on descaling and cleaning water-cooled, or water circulating, equipment, just issued by Oakite Products, Inc., New York, is of timely interest to engineers, works managers, superintendents, foremen or other marine executives responsible for this work.

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N INFORMAL association of shipping interests has been organized to discuss the various operating, traffic, accounting and other problems of common interest to West Coast operators that may arise from time to time under present war conditions.

This association will have no jurisdiction over rates and such matters; it will not have any authority to commit or bind its individual members in any manner whatsoever, and it is not intended in any way to supersede or encroach on any other existing organizations.

It will: be known as the Pacific Coast General Agents and Agents Association; will have its head-quarters in San Francisco at 1004 Merchants Exchange Building; and will be coastwise in scope. Officers are as follows:

Chairman, M. J. Buckley, Amer-

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Purposes were determined as follows: "To consider jointly the various problems of the general agents and agents which arise from time to time on the Pacific Coast in connection with matters concerning the War Shipping Administration, and other parties; and to endeavor as a group, to solve said problems to the satisfaction of all concerned."

A. R. Lintner, Pacific Coast Director of the War Shipping Administration, and E. J. Bradley, Assistant Pacific Coast Director, attended the organization meeting, and Mr. Lintner expressed himself as being heartily in favor of this constructive idea.

The Executive Committee will clear all suggestions and recom-

mendations of the following four departmental committees:

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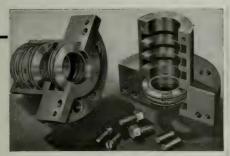
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(Page 172, please)

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Continued from page 168)

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(Continued from page 167)

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February, 1943

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Official Organ Pacific American

Pacific American Steamship Association

Shipowners Association of the Pacific Coast

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Pacific MARINE REVIEW

Post-War Shipping

N THE MATTER OF planning for the policies and the operation of post-war, overseas American-flag shipping, we are fortunately doing something about it well in advance. The American Maritime Council, composed of the best shipping brains in America has been formed and implemented for that very purpose. This body is composed of represen tatives from: the American Merchant Ma rine Institute, the National Council of American Shipbuilders, the American Bureau of Shipping, the National Foreign Trade Council, the Society of Naval Architects and Marine Engineers, the Propeller Club of the United States, the United States Maritime Commission, the War Shipping Administration, the United States Navy, marine underwriters, financial institutions, and admiralty attorneys.

On such a broad base of representation and adequately financed by the shipowners and shipbuilders of America, this Council should be able to formulate wise and practicable plans for the maintenance and the successful operation of a worthy American merchant marine for the period following this war.

No one at this time can affirm with certainty the time at which this war will end. Everyone who reads the daily, weekly and monthy press of America should know that when the war does end, certain conditions will be in force that gravely affect the American merchant marine.

A summary of these conditions shows that:

(1) The United States Government will own the largest fleet of merchant ships in the world.

- (2) A large part of that fleet will consist of the so-called Liberty ship, 10,800 dead weight ton capacity, and about 12 knots speed.
- (3) A large part of the world will be desperately in need of many products of American factories and farms.
- (4) American manufacturing plants and American farms will be in great need of many products of overseas countries.
- (5) There will be a very active market in foreign maritime powers for ready-togo-to-sea shipping.
- (6) There will be a very active demand at high prices for cargo vessels.
- (7) Unless all of these demands and conditions are wisely met, there will result the same type of chaos in shipping that followed World War I.

This appears on superficial examination to indicate a "natural" opportunity for the American merchant marine to take over the marine transport of world trades.

However, the marine transport of world trade is not to be taken over in any simple fashion or permanent way just because we happen to have all the ships. There is a tremendous lot of this world trade known as "tramping," in which our modern American merchant marine has not shown the slightest interest. We are interested in the cargo liner trade—the trade based on American port to principal foreign port. This trade must be fed by the "coaster" tramp services, the ships that serve minor ports of the coasts of the six continents and the "seven seas."

This "tramping" trade has always absorbed the low-cost ships, and most of the older ships of this class have been eliminated by war.



LOYCE HICKMAN, Marinship burner, reflects the S.S. Mark Hopkins just before launching on January 17.

THREE TIMES

a day, the throngs pour through the gates into Marinship-twenty thousand strong. About twelve hundred are women, adapting themselves as from time immemorial to new conditions, new ways of living and of working. There has been little fanfare accompanying this sudden and unprecedented change. Welders, burners, shipfitters, pipefitters, sheet metal workers, expediters, steel checkers, have taken their places beside the men, not necessarily replacing men but rather releasing them for a higher purpose-to fight for the cause of Democracy.

These women are pioneers in a new field, and on them rests a great responsibility—the responsibility of making good for their own sake, for the sake of the women who will follow them into the yard, and last, but not least, the responsibility of setting the standards and establishing the place of women in the shipbuilding industry for all time to come. They are fully aware of the fact that upon the record which they make, individually and collectively, will rest the decision as to whether or not women will be retained in this industry after the war.

On the whole, they have done

Shipbuilder And

A CLEARING HOUSE FOR IDEAS ON THE WAR-WINNING JOB OF WHOLESALE PRODUCTION OF SKILL IN THE MARITIME CRAFTS

Women

IN SHIPYARD WORK

by Ethel McCarthy

an excellent job. They are good workmen and can weld and burn as well as any man. Foremen and leadmen have reported that they take direction well, are careful of tools and much easier on them than the men; that they adapt themselves to new conditions readily, have the patience to do repetitive work, require less supervision than men and have established an enviable record on safety and absenteeism. Another important item is that there is a relatively small turnover in the ranks of women employees.

A survey made about six weeks ago disclosed the fact that the average woman in the yard was between 26 and 35 years of age, between 5'3" and 5'6" in height, weighed approximately 130 pounds and is married with no children. She has had some high school training and has had previous work experience in the low-income occupations, where her average earnings have not been in excess of \$100 per month.

We are not prepared to say to what extent our social structure is responsible for the fact that the history of women in industry has indicated that the American businessman has been very reluctant to admit that women can do industrial work satisfactorily. The present emergency and the part women are playing in it has successfully disproved this theory. In this connection, when it became apparent that it would be necessary to use women extensively in the shipyards, threats of quitting and of refusal to work with them were widespread. It is to the credit of the good sportsmanship of men that, when once the ice was broken and the women had taken their places in the yard and had demonstrated their ability to do a workmanlike job, those who were most positive in their objections went just as far in the opposite direction in sponsoring the women and in doing everything possible to assist them.

It is interesting to note that one of the most difficult problems in connection with women is encountered in the endeavor to divert to other lines of activity women determined to work in the yard-housewives and those from seden-

Seaman Training

tary occupations, deemed not obspace to ship and work because of age, weight and lack of adjustrial work experience. Of course, adjustments have to be made by the women going into the shipyards to adapt themselves to the new conditions under which they will henceforth be working. To aid this situation, a counseling service has been established both in the training center and in the yard itself, where problems, personal and otherwise, can be taken and worked out on an individual basic.

As a further aid, a separate induction training program has been established for women at Marinship to cover in greater detail their particular needs. This program is designed to anticipate situations which might arise in the yard and which might otherwise result in loss of time and production. The group is welcomed to Marinship and some of the history of the organization is given together with information relative to other projects in which the management of Marinship has participated. It



SPELLING OUT "VICTORY" IN SIGN LANGUAGE

With the exception of the big fellow in the center, John "Dutch" Philes, chipper leaderman on the day shift at the Marinship yard in Sausalito, these men are deaf mutes. Their lack of hearing is a distinct advantage, since there is no noise around a shipyard which is more ear-piercing than a chipper hard at work. There are 14 deaf mutes employed at Marinship, some on each shift, and all are doing a swell job helping to build ships for the Victory Fleet.

is interesting to note that a large percentage of the persons going into the yard already are informed as to the type of ship being constructed and know that at the completion of the fifteenth cargo ship, the efforts of all Marinship shall be confined to the building of tankers. This fact and the fact that Marinship is a permanent vard, has brought many highly skilled and competent persons to the organization. To inculcate pride in the organization of which they are now a part, they are also informed that the entire shipyard, together with the first cargo ship, started from scratch and was completed in seven months. This is a record without parallel and one of which all employees of Marinship are

Next, in order to give an idea of the plan of the shipyard, a detailed map of the yard is displayed. American women are familiar with the modern method of building automobiles by the assembly line method, made famous by Henry Ford and others. The fact that Marinship is laid out on the same basis is of absorbing interest and brings home to them the need for production and how it is possible for us to build ships in record-breaking time.

The details of building ships are outlined, from the making of the plans by the draftsmen, through the mold loft and the making of the templates; then to the delivery of the raw materials, through the fabrication or plate shop and the subassembly department where so



GROUP OF BURNER TRAINEES at Marinship's inyard training school actually handling production work as they learn.



ANOTHER SCENE of school shows in the foreground a feminine shipfitter trainee receiving instructions in the art of shipfitting, and burner trainees at the right.



SIX WOMEN burner trainees at Marinship producing regular work diligently and capably.

many women welders and burners are utilized, and thence to the ways and the erection of the hull.

Marinship has provided well for its employees and almost every type of service is made available for them. An active Employees Relations Division provides information relative to tire-rationing and pool-car riding; a rental section and a Selective Service Deferment section are also available for their convenience. There is a cafeteria, which operates twenty-four hours a day. A hospital and firstaid stations are scattered throughout the yard, and all injuries, however slight, must be reported at once. Marinship boasts of two newspapers, one official and one unofficial, the "Marin-er" and the "Stinger" respectively, where suggestions, criticism and "beefs" of all kinds can be aired, as well as news of the activities of the yard. In addition, there is the "Payroll Allotment Authorization Plan" and all employees are urged to utilize this means of further contributing to the war effort as well as to provide for the proverbial "rainy day."

It is believed that Marinship has reached its peak of employment. To meet the emergency and the unprecedented drain on the supply of trained craftsmen, it was necessary at the start of the building program to lower appreciably the standards of employment. To remedy this situation and to upgrade its employees, Marinship has established one of the finest training centers in the entire United States under the able direction of Malcolm Baird, its superintendent. Detailed information of available classes is included as part of the induction program, and all are urged to take advantage of the highly trained staff of instructors to make of themselves skilled workmen.

So far as women are concerned. they have received for the most part only basic training, and are admittedly on the first step of the ladder towards this objective. However, with job breakdown or job dilution, supplementary training at the Training Center will, with time, perfect them in their jobs. In addition, an extensive production unit has been added to the Training Center, and here, as part of their training and under actual working conditions, women are taught production work prior to their transfer to the yard.

In conclusion, we are pleased to state that the management of Marinship has expressed itself as being gratified with the splendid job women are doing in the ship-yard. They know that women will continue to meet the situation, carrying as they do in many instances, a double load of home responsibilities as well as a full forty-eight hour work week at Marin-

ship. It is agreed that in a truly remarkable fashion, women are meeting the demands of the war emergency, and are making a substantial and definite contribution to the defeat of the Axis.

A Rigger with Ideas

Developments by M. J. Smith, general foreman of outfitting gantrys and derrick barges in the Alabama Dry Dock & Shipbuilding Company yard at Mobile have resulted in a record-breaking test of all booms on Liberty ships. The latest test was completed in two hours and 35 minutes.

G. N. McIlhenny, manager of the shipbuilding department of the company, has received official congratulations from the Maritime Commission's head hull inspector in Mobile, John C. Campbell, for the quick test.

To accomplish the time saving, Smith designed a barge for testing davits and five-ton cargo booms. and a barge for testing 15 and 50ton cargo booms. Not only did these make it possible for the records to be broken, but many man hours have been saved by the use of these barges in testing all booms on the off-shore sides of the ships, eliminating congestion on the outfitting piers. Further, a great hazard has been removed by the elimination of the use of other weights on the inshore side while testing goes on. By use of the barges, if any of the ship's gear should part, the barges would fall into the water, and would not endanger lives or property.

In addition, Mr. Smith also recommended and designed a portable elevator now being used on cargo ships for placing light loads on deck. This device not only requires but one man to operate it, but it does the work of a locomotive crane and its six-man crew.

Mr. Smith, too, is the father of plate hooks, and safety dogs and safety hooks used in the yard, and for this development, he was given a special pin by the company's safety office.

U. S. M. C. STANDARDS FOR SHIPYARD TRAINING

herewith is a plan to insure uniformity in standards for training and regulation of the training programs of the various shipyards having contracts with the Mari-

Need for Program

time Commission.

1. Maintenance of a training program during this period when the utmost utilization of man pow er is requisite is apparent almost on its face. The Selective Service System has approved as critical occupations many of the jobs held by shipyard workers. That ap proval was given with the under standing that the peak of intake in shipyards would be reached in September of this year, and that on or about the first of January, 1943, the intake of man power in shipyards would be limited to little more than that required for replacement as a result of turnover. The requirements of the Se lective Service System are such that the deferments granted shipyards under the Occupational Bulletin (No. 6) cannot be expected to be maintained after the first of the year, and the need for having skilled man power available to fill breaches caused by the induction of skilled shipyard workers after that time is such that a continuance of training on a well established and well regulated basis is absolutely essential to the insurance of maintenance of an efficient production rate during 1943.

2. The plan suggested is of such a nature that it is capable of application in almost any yard. Sufficient flexibility is permitted to take care of peculiar local problems; yet, at the same time, general standards which will result in the production of trained men who will be interchangeable on any coast are proposed in the interest of producing shipyard workers who are trained along the same general lines.

Origin of Plan

This plan grew out of a conference called by Daniel S. Ring, director of the Division of Ship-yard Labor Relations. At this conference, it was decided that some standards for basic training in the shipbuilding trades were both necessary and desirable. There was, therefore, drawn up the following program, which was approved and adopted by the U.S. Maritime Commission on September 22.

Section I. Training Director. A qualified training director with staff proportionate to the responsibility involved should be employed in all yards, having 1000 or more employees. He should rank as superintendent and be responsible to top management. In ship yards employing less than 1000 persons, training responsibility should definitely be assigned to a qualified production official as a major responsibility in addition to his other duties.

Section II. Scope. The compre hensive training program to be established should provide essenof employees in the shipvard. Such a yard-wide training program should be integrated with production, but under no circum stances shall training be made a subterfuge to secure production at the expense of labor. Every production supervisor should be impressed with the fact that training is a major responsibility and should be given the specific responsibility of seeing that estab lished and available training opportunities are effectively used by those of his men who require

Our war production objective not only involves the maximum possible overall production but also comprehends the most efficient production rate. The training program is a basic factor in the attempt to reach the most efficient production rate for each individual worker.

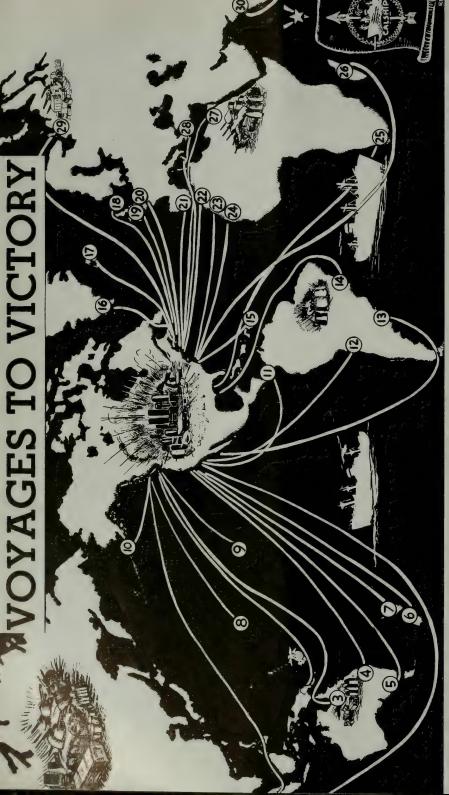
Section III. Types. The training and upgrading program should include the four basic types:

- A. Pre employment or Pre production Training
- B. Supplementary Training
- C. Job Training
- D. Supervisory Development

A. Pre-employment or Pre-production training should be design ed to initiate quickly the new employee in proper work and safety habits. This step may require only a few hours within the plant, or a longer period within or without the plant. Instructors, course outlines and time limits should be recommended and checked by the shipward if the training is done by outside agencies.

B. Supplementary training courses should be designed to help the employee (1) to function more efficiently in his present job, and (2) to prepare himself for upgradinitiative and resourcefulness. These courses may be given within or without the shipyard. If without the yard, instructors should be recommended by the shipvard from the ranks of competent instructor-craftsmen. The shipyard should also suggest suitable courses, cooperate fully in preparing training material, securing needed equipment and gen erally checking the entire proce-

- C. Job training should be designed to insure effective instruction of the working force by supervisors and mechanics in how to do each specific job on the day-byapplying those methods in actual production. The insurance of such effective instruction requires the training of supervisors and mechanics themselves in the best methods of imparting their skill and knowledge to others. This will include instruction in job analysis, which should lead to constructive participation by supervisors and mechanics in job simplification.
- D. An adequate program of supervisory development underlies the solution of training and pro-



The state of the s

GREAT EFFORTS are being made in all shipyards to reduce absenteeism among the personnel. At the big Liberty shipyard on Terminal Island, Los Angeles Harbor, California Shipbuilding Corporation is currently running a contest called "Voyages to Victory."

Each department in the shipyard is assigned a voyage from an American port to a foreign port. A huge map, of which the above is a rough sketch, shows each of the

THE CRUSADE AGAINST ABSENTEEISM AT SHIPYARDS

For 60 days following the opening of the contest, a careful check is kept daily on absenters in each department. If every worker in a department is on the job, the ship representing that department moves forward by the full one-sixtieth of the total voyage. If 25 per cent of the

per cent of its daily allotment.

The departments are divided into the Outfitting Divi-

workers are absent, then the ship moves forward only 75

and the Hull and Yard Division, headed by Admiral Sides, manager of that division. Each department will have a dart showing how its ship's voyage is progressing. The superintendent of each department is captain of the ship

representing that department.

This contest began January 20 and will end March 21.
It has aroused keen interest and spirited competition be-

tween the departments.

luction problems of every ship yard. Such a program should be continuous and should be design ed (1) to improve current superision, and (2) to train prospecive supervisors. Such a program should be conducted on a confermee basis and should include (1) thorough study of the practical pplication of human relations to dipyard work, (2) acquisition of recessary and up-to-date craft knowledge and skills, (3) a study of the training, production and dministrative responsibilities of supervision, and (4) analysis of pecific production problems.

The upgrading portion of the bove program requires the instiution of an equitable systematic olan of advancement with finanrial recognition that spurs employees to qualify for higher skilled operations. Only by such planned arrangements can the yard provide itself with the intermedite operations skills—of the variius grades between the beginner evel and that of the journeyman necessary to the rapid construcion of ships. The organization and maintenance of this system should be the responsibility of the raining director. No changes of ate or advancement in the classiications from beginner to journeyman should be made without

his recommendation or approval

Section IV. Apprenticeship. It is further recommended that long term apprenticeship training be established for all-round skill in the various trades with standards not lower than those set up by the Federal Committee on Apprenticeship.

Section V. Federal Control. The Federal contracting agencies will evaluate the existing training programs in each shipyard according to the standards set forth in Sections I to IV inclusive, and make such specific recommendations as are deemed necessary locally to insure full and uninterrupted production of ships. Periodic inspection of training activities will be made by designated representatives of the agencies concerned. Each shipyard will submit a monthly report of all training activities including type of training. methods of training, hours of training, enrollment, and location of the training centers - along with other pertinent information to proper governmental agency.

Section VI. Federal Aid. The contracting agency of the Federal Government will offer such assistance as is necessary to institute and maintain an adequate training program.

Administration of the Plan

The plan is to be administered as follows:

- 1 All technical matters will be referred to J. E. Schmeltzer, whose decisions on the same will be final.
- 2. To coordinate the training activities, programs and functions of shipyards having contracts with the Maritime Commission, a training supervisor will be appointed in accordance with the approval given by the Commission on June 18, 1942.
- 3. Recognizing the necessity of specialized work on welding, an expert on welding training to work with the supervisor of ship-yard training will be appointed.
- 4. The active administration of the plan will be the responsibility of the four regional construction directors and the supervisor of training, and his organization will work through their offices with respect to shipyards coming within their jurisdiction.

Supervisor of Training

Jack Wolff, former Director of Training at Richmond Shipyard Number One, was chosen to be Supervisor of Training and is now engaged through the Regional Directors in working out this program. James Wilson was appointed as welding training expert.



BAILEY AWARD WINNERS

TWO CADETS of the United States Merchant Marine Academy, G. W. AGEE (left), 22, Berkeley, California, and G. E. MAY (right), 20, Reading, Pennsylvania, have been selected to receive the 1942 Bailey Award, based on outstanding scholarship, personality, and general bearing, the War Shipping Administration announced on January 14.

The Bailey Award, presented each year to outstanding members of the U. S. Merchant Marine Cadet Corps, is made through the generosity of Charles F. Bailey of Newport News, Virginia. This year the Award is a \$100 War Bond to each cadet.





BATTLESHIP NORTH CAROLINA fires three 16-in. guns from No. 1 turret.

(Official U. S. Navy Photo)

General Electric In 1942

RODUCTION OF marine equipment for the Navy's all-oceans fleet and the Maritime Commission's huge merchant ship program continued during 1942 at an accelerated pace. Quantity of the equipment turned out, which cannot be revealed, was in itself a tribute to American manufacturing methods, the men who conceive them, and the men who carry them out.

Marine equipment manufactured by General Electric serves many purposes on shipboard. Propulsion equipment, auxiliary power generating equipment, power distribution, and protective equipment, such as cable, transformers, and switchgear, as well as various types of motors and other utilization equipment that puts the power to work, are supplied for all types of ships.

In addition, a very substantial amount of the Navy's requirements of armament, ordnance control, and contributing products is manufactured at G-E plants.

Propulsion turbine production offers one of the best indices of the company's overall activity in the marine field. They are now building for marine requirements in a three-year period, three-quarters the horsepower equivalent of all the turbines they produced for all purposes on land and sea in the preceding forty years.

This staggering production is being made possible with greatly expanded turbine manufacturing facilities, supplemented by extensive subcontracting. If the company's turbine manufacturing facilities were placed under one roof it would require a building 9 miles long and 80 feet wide.

New turbine plants, put into operation during the year, turned out production ahead of anticipated schedules. For example, at one new plant in Pennsylvania, the first C-3 cargo ship turbine was shipped better than three months ahead of schedule, and production for the remainder of the year at



J. W. BELANGER

that plant was a third greater than planned originally.

Subcontractors involved in the manufacture of G-E turbines include a Massachusetts textile machinery manufacturer, who has converted part of his facilities to the production of mechanical-drive units.

by J. W. Belanger

Mgr. Federal and Marine Department
General Electric Company
Schenectady, N. Y.



E. J. HENRY, oil tanker, equipped with G-E turbine-electric drive.

Accelerates Production of Marine Equipment for our All-Oceans Navy and Merchant Marine

Weight, space, and efficiency considerations have accounted for radical changes in the design of electric propelling equipment. In one instance, the turbine-generators operate at 5600 rpm equivalent to 93.3 cycles. These units are of a rating applicable to many types of ships during peace-time, and can be expected to lead the way into new fields of design that will enlarge the application possibilities for electric drive.

Approximately 180 per cent more turbine-electric tankers were under construction during 1942 than in the preceding year. Single-screw tankers incorporating turbine-electric drive, using 90 rpm, 2300-volt, 3-phase, 60-cycle, main propulsion motors were under construction at the Alabama Dry Dock Shipbuilding Company, the

Kaiser Company's Swan Island Yard, and Sun Shipbuilding and Dry Dock Company.

Turbine-electric propulsion equipment was also being built for a number of twin-screw passenger and cargo vessels under construction at the Alameda Yard of the Bethlehem Steel Company. These vessels will have two turbine-generators and two 120-rpm, 3500-volt, 3-phase, 60-cycle main propulsion motors with necessary control. The turbines will operate at 590 lb. pressure and 815° F. total temperature. Each vessel will also have four 600-kw auxiliary turbine-generator sets.

High-speed, single-screw tankers being built by the W. A. Bechtel Company of Sausalito, California, are to be provided with turbine-electric drive, rated at 103

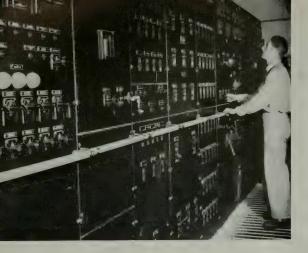
rpm. These turbines also operate at 590 pounds and 815° F. total temperature.

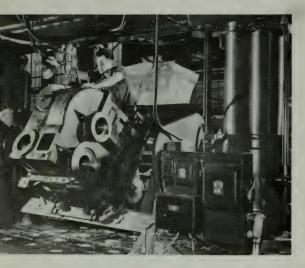
Development of geared turbine drive, carrying it into fields requiring more than 50,000 horse-power per propeller shaft, will be considered marvelous engineering ingenuity, when the full story can be told.

Such things as new methods of maintaining alignment, the equalization of tooth-pressures, and the incorporation of design factors that permit the weaving and warping of hull structure without effect on the operation of equipment will prove to be design advancements of great value to the entire maritime field.

Diesel-electric drive became more firmly established in the war program. Propulsion equipments of this type were being produced during the year at the rate of 50 per cent more than the record year of 1941. There was a definite trend toward motor direct drive. In over half of the vessels, the propulsion motors were connected directly to the propeller shaft, thereby eliminating the need for gears.

Controls were arranged in all of the vessels so that at least half of the electric power generated would be available for auxiliary







purposes if necessary. This is an outstanding feature of diesel-electric drive which recommends its use for many types of vessels.

Production of submarine propulsion equipment was increased approximately 100 per cent.

As the year drew to a close, the company, at the request of and in cooperation with the U. S. Navy, began the operation of a school that will teach electric propulsion principles to about 1400 of the Navy's new operating personnel by the end of 1943.

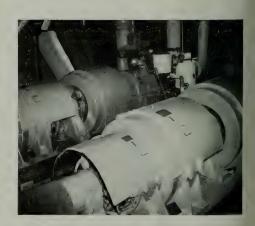
One of the features of this school will be an engine room on land erected at one of the company's plants especially for the course. This will enable the students to observe all the components of a turbine-electric propulsion set in operation.

ABOYE: SWITCHBOARD and main control station shown installed on a turbine electric tanker. G. E. produced many of these during 1942.

CENTER: THIS DRILL FIXTURE saves 24 to 32 hours per week in the drilling of marine gear casings at one of G. E.'s major works. It permits positioning the casings for drilling at any angle in a full circle, and at any plane.

BOTTOM LEFT: MOBILE UNITS for supplying directcurrent for arc welding operations on steel ships are being used with great satisfaction at a West Coast shipyard. Shown here are two of the units, each consisting of six G. E. single-operator welding sets mounted in roofed steel frames.

BOTTOM RIGHT: TWO G. E. auxiliary turbine-generator sets in the eagine room of a 10,000-ton turbine-electric drive tanker.



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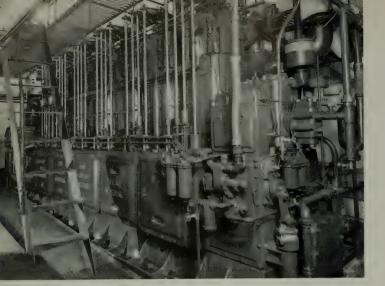
Two New Diesel Tugs ...

THE ADMIRAL LAND and THE ADMIRAL VICKERY



boatbuilding yard of Nunes Bros., Sausalito, California, recently completed and tested two wooden tugs for Richmond Shipyard Number Two of the Permanente Metals Corporation. The hulls are 88 feet long overall, 21 feet beam over planking, and 11 feet draft. They were built under the supervision of Walter Fenchel, general superintendent of Richmond Number Two.

Each of these vessels is powered with an Atlas Imperial six-cylinder, four-cycle, fully-reversible, direct-connected diesel engine, having 15" bore and 19" stroke. This engine transmits its power through a Kingsbury thrust bearing to a three-bladed propeller especially designed by Atlas engineers to suit the towing problems of the shipyard. The propellers were made by the Pitchometer Propeller Company.



The engines are fitted with Alnor pyrometers and thermocouples, and a Weston electric tachometer and direction indicator.

With the four yards of the Kaiser interests at Richmond turning out ships at a rate of almost one a day, it is contemplated that these tugs will be in service on a 24-hour basis, therefore no expense or pains were spared by either builder or owner in making a first-class job in every respect.

The vessels are of wood construction from lines prepared by the Kaiser naval architects staff, and include throughout the use of western woods. As indicative of their strength, it may be of interest to note that the frames are 51/2" doubled and spaced on 18" centers. At every fifth frame, the specifications called for the vessel to be equipped with a steel reinforcing or web frame built up of 3/8" plate, and, additionally, the vessels are stiffened by three watertight steel bulkheads, one directly forward of the crews' quarters in the forecastle, and one each fore and aft of the engine compartment. The 41/2" planking is all vertical grain Douglas fir. Accommodations are included in the forecastle for eight members of the crew, and directly aft of the pilot house on the upper deck, a commodius stateroom and combination chart house has been arranged for the captain.

When launched, one of these tugs was christened Admiral Land and the other Admiral Vickery in honor respectively of the Chairman and the Vice Chairman of the U. S. Maritime Commission.

Besides being equipped for inside work at the shipyards, both the Admiral Land and the Admiral Vickery are equiped for seagoing duty.

All of the auxiliary machinery is driven by individual direct-current electric motors. To provide power for this service, each vessel is equipped with two Caterpillar diesel generating sets, one of 15 kw, and the other of 40 kw capacity.

The engine room auxiliaries in each tug include:

- 1 Quincy 2-stage air compressor:
- 1 Blackmer fuel oil transfer pump;
- 1 Deming bilge pump;

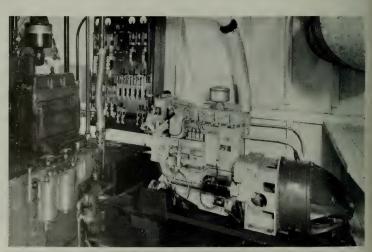
1 Deming salvage or fire pump. Deck machinery consists of a large electric-drive towing winch installed on the afterdeck, and an anchor winch with two warping

gypsey heads installed on the forward deck.

These vessels are the largest and most complete diesel tugs

ABOVE: Engine room of Admiral Land looking aft.

RIGHT: Diesel generating set and switchboard on tug Admiral Land.



built for use in the San Francisco harbor area in many years, and are a distinct and proud addition to the shipping facilities in this splendid harbor. As they will be used for the most part in the handling of ships built by the Maritime Commission for the current war effort, they have been additionally honored by being respectively named after the Maritime Commission's top-ranking officers.

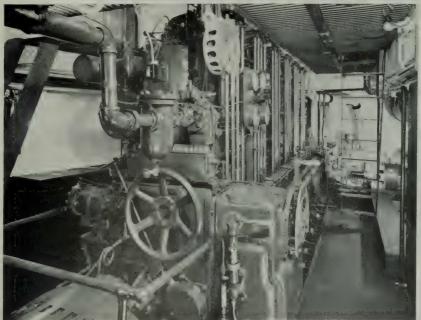
The Atlas Imperial Diesel Engine Co., manufacturers of the engines, are proud to have had the opportunity of powering such vessels in which they have placed their well-known products similar to the engines that their busy factories at Oakland, Calif., and at Mattoon, Illinois, are now building as their part of the current war effort for the Maritime Commission, United States Army, and United States Navy.

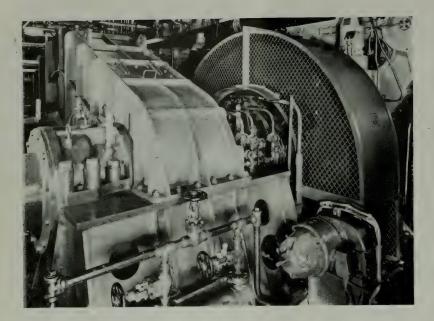


TWO ENGINE ROOM VIEWS OF THE TUG ADMIRAL LAND

ABOVE: Upper grating and top of cylinders.

RIGHT: Working platform showing controls of six - cylinder Atlas diesel propulsion engine.





ELECTRIC
COUPLING
AND GEARS, a
typical Westinghouse installation aboard
ship. The 5 hp
gear motor in
foreground
turns the propeller for inspection.

Westinghouse Electric Couplings

LECTRIC COUPlings are devices for transmitting torque, by means of electro-magnetic forces, in which there is no mechanical contact between the driving and driven members.

During the past three years, the United States Maritime Commission has put into service a large number of vessels propelled by diesel engines connected to reduction gearing by means of electric couplings. The Westinghouse Electric & Manufacturing Company has provided or has on order at the present time, electric couplings and coupling control for 81 vessels. Four of these ships are driven by four diesel engines connected by four electric couplings and two pinion gears to a single propeller shaft. The remainder are driven by two diesel engines connected by two electric couplings and two pinion gears to the proThe electric couplings involved range from 4375 hp at 180 rpm with an outer diameter of 115 inches, to 1170 hp at 350 rpm, 69½ inches in diameter. All are of essentially the same construction.

Some of the advantages obtained are as follows:

- (1) A number of engines may be used to drive a single propeller, and any engine or engines may be instantly connected or disconnected from the propeller shaft by operating a switch to close or open the coupling field circuit.
- (2) Space and weight are saved because the use of reduction gears permits the use of relatively high speed diesel engines.
- (3) Diesel engine vibrations are reduced to practically negligible magnitudes in the gearing.
 - (4) The maximum torque

through the coupling is limited to approximately 150 per cent of normal engine torque. If for any reason, an engine seizes, the coupling will slip and not permit the remaining engines to damage it or the gearing.

- (5) The electric coupling permits maneuvering by running one-half the engines in an ahead direction, one-half in an astern direction and alternately exciting couplings connected to these engines.
- (6) Since the coupling members are separated by an air gap, there is no mechanical contact and no wear.

Mechanical Construction

The electric coupling consists of two fabricated steel spiders, rims and flanges. On one rim, usually but not necessarily on the inside of the outer one, are bolted a num-

ber of held poles which are exented through collector rings, from a direct current source. In the larger sizes the field coils are strap while the smaller coils are wound with insulated wire. On the other element a laminated core, surrounding the rim, carries a double-deck squirrel cage winding similar to that of the squirrel cage induction motor. The two elements are so constructed that one rotates inside the other, the two being separated from one another by a small uniform air gap. Either of the two elements may be connected to the engine crankshaft flange and the other to the gear pinion flange. In most cases, it has been found desirable to connect the inner element to the engine because it represents less over hung weight on the crankshaft bearings; however, in special cases where it was desired to utilize the greater flywheel effect of the outer element, this member has been connected to the engine shaft.

Electric Theory

The fundamental principle of the cicettre conclude is a seld as the alternating current generator and motor, both of which it resembles. The transmission of torque from the driving element is similar to that of the squired cage induction motor except that the rotating magnetic field, in the case of the electric coupling, is produced by actual mechanical rotation of a constant direct current produced field rather than being set up in a stationary magnetic frame, by polyphase alternating current, as it is in an induction motor.

When an electric conductor is caused to move perpendicular to the lines of force in a magnetic field, an electro-motive force is set up in the conductor. If the conductor forms a closed circuit, this induced voltage causes a current to flow. When current flows in a conductor, there is always associated with it a magnetic field which surrounds the conductor

and whose trength is proportional to the amount of current thowing

Thus, in the electro coupling, the short-circuited bars of the in not element have entrent flowing in them due to relative movement with regard to the magnetic field of the outer element. The magnetic field set up by this current is morning-seed on the direct current magnetic field causing the resultant field on one side of the conductor to be strengthened and on the opposite side to be weakened. The conductors are acted uson by a force tending to move them away from the strong field and toward the veck field. Thus the coupling driven element turns in the same direction as the driving element, the difference in speed (slip) being exactly that required to produce the torque deconded by the load.

Torque Specifications

The torque produced in the driven member is directly proportional to the induced current flowing in the rotor bars and the power factor. In order that the electric coupling may be used for maneu vering a ship, it must be able to produce relatively large amounts of torque at high slip. U.S.M.C. specifications require the coupling to produce at least 150% pull out torque as well as a minimum of 75% normal torque up to 140% slip.

The double-deck rotor bar construction is used to produce high

ON DIESEL ENGINES

WITH REDUCTION

GEAR-SETS

by James A. Wasmund

Marine Engineer, Westinghouse Electric & Manufacturing Company OUTSIDE RIM of a marine electric coupling being welded at Westinghouse' East Pittsburgh Works.





OUTER ELEMENT of a big Westinghouse electric coupling, which will be mounted on pinion shaft of the gear unit.

INNER ELEMENT of electric-coupling, which will be mounted on the engine crank shaft. Double-deck squirrel cage winding provides high torque at both low and high speed.



Page 64

torque at extremely high slips, such as occur during reversal and starting the propeller from rest. When the slip is high, the induced voltage is at high frequency, and the high reactance of the deep bars causes the current to be forced to the outer high-resistance bars. Since the reactance of the outer bars is small compared to their resistance, the power is high and resultant torque high. When operating at normal slip, the frequency is low and the major portion of the current flows in the inner or low resistance winding, resulting in high transmission efficiency.

The couplings act as torsionally flexible members and torsional dampers. The pulsations in torque from the engines are smoothed out, reducing gear wear and noise and minimizing torsional vibrations in the driven system.

The use of electric couplings as disconnecting clutches is especially useful in multi-engine ships. The usual procedure when near a dock or when maneuvering in a close channel is to run half the engines ahead and half astern. The ship can be maneuvered in either direction simply by operating a single lever which applies field to the proper couplings, thus connecting the propeller to either the ahead or astern engines as required. All speeds except "Full Ahead" or "Full Astern" can be obtained without reversing the engines and without the use of any starting air as the engines run continuously in one direction.

The couplings also permit any engine to be shut down for adjustments without having to stop the remaining engines. At the completion of the work, the coupling is energized again, it cranks the engine and the engine is back in service immediately.

It is quite feasible to design an electric coupling which may be used to adjust the speed of the driven load with a constant speed prime mover. This can be done by using a wound rotor brought out to slip rings and external adjustable resistance. However, the efficiency of transmission is reduced in direct proportion to the speed reduction, making this means of speed control unattractive except where very small amounts of power are involved

The electric coupling has filled a detunte need in the application of high-speed engines to ship propulsion and will undoubtedly find favor in other applications where similar characteristics are required.

* Obstra to a paper presented at ANM I Asia, Small Meeting, New York City, New Meeting, 1117.

Westinghouse Reviews its Year

THE WESTINGHOUSE Electric & Manufacturing Company reports that at its current tonnage rate it is delivering enough material to fill 4900 freight cars in a single month. The company has stepped up its monthly production from \$34,000,000 worth of equipment January, 1942, to more than \$52,000,000 in October, and to meet this schedule has added more than 1500 new employees every month during the past year.

In a review of the company's war effort, A. W. Robertson, chairman, disclosed that despite shortages in critical material and changing labor conditions, not a single plant has been closed down for a day for lack of necessary material. The company realized that in this war effort, restrictions and orders from the national Government are inevitable, and has tried in every practical way to accommodate itself to them. As a result, things have gone smoother than they would have gone with resistance to Government orders. Once an order was made, the company considered it was its duty to carry it out as promptly as possible.

The Westinghouse Company had a running start on the war work which became so necessary after the attack on Pearl Harbor over a year ago. It had offered its services in the summer of 1940 to the national Government for such extra work as the so-called "National Defense Program" might require. It was given the job of building and operating the Navy Ordnance Plants at Canton and

Louisville, and later the Merchant Marine Plant at South Philadelphia.

New War Devices Developed

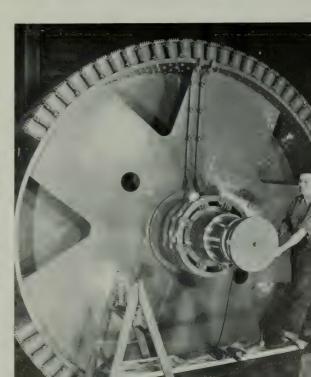
Modern warfare must be fought with men, but it cannot be fought by men in the ordinary, old-fashioned sense. A hundred men are a poor match for one tank. And thousands of men are helpless before a few airplanes. Soldiers and sailors must still be brave, ingenious, and aggressive, but they must have war machines if they are to cope with an enemy as well

armed as our foes. For this equipment, the Government turned to companies. The company was not asked to build ships, airplanes, or tanks, but was asked to build the vital parts of these machines, without which the ship or aircraft would be worthless. Westinghouse not only undertook to build our regular lines of turbines, genera tors, motors, switch-gear, and other equipment, but from the research laboratories came devices never before used in modern warfare, which greatly improved the fighting quality of the equipment.

The existing facilities of the company, great as they were when the struggle started, were not sufficient for the demands placed upon them. As a result, new factories were built, additions to old factories made, and millions of dollars of additional machine tools purchased. All told, the company has spent in the last four years more than \$165,000,000 for additional facilities. Eighty-one million of this amount was provided by the Government.

POWER FOR

THIS 30-TON ROTOR is part of 6600 - hp tanker motor being built by Westinghouse. The workman is polishing the journal of the 13 - foot - high rotor, or rotating part, of the motor.



Meus PACIFIC NORTHWEST

by R. H. Calkins

A Busy Boat Yard

One of the busiest shipyards in the Pacific Northwest with wooden vessel contracts is the Washington Boat Works on Lake Union, which is completing 12 sturdy patrol vessels for the Coast Guard, and has begun work on 10 aircraft rescue boats for the Navy and 34 training boats for the United States Maritime Commission. Contracts held by the company total \$750,000.

The Maritime Commission vessels will be Monomoy surf boats, designed at Monomoy, Cape Cod. They will be sent to the officers' training station at Catalina, Calif.

All of these patrol boats were prefabricated and the time of construction averaged less than two weeks each. The vessels were sent down the ways with engines installed.

Ray L. Butler, who came to Seattle four years ago from Los Angeles, is manager of the company.

Tenth Mine Sweeper

The Bellingham Marine Railway & Boatbuilding Company, January 9, launched its tenth mine sweeper, the YMS-274, which was christened by Nola Noble, 11-year-old daughter of Mr. and Mrs. Henry B. Noble. The flower girl was Diala Fisk, daughter of Mr. and Mrs. Jess Fisk. The fathers of both girls are employed in the yard.

Last year, the Bellingham Marine Railway & Boatbuilding Company launched nine mine sweepers and a salvage vessel of more than 1300 tons.

Woman Builds Boats

Mrs. Ruth Franck, a determined little woman, who came to Seattle 14 years ago with her husband, the late Victor A. Franck, is Seattle's only woman boatyard owner. She is busy early and late in her office at the Vic Franck Boat Company's plant, 1109 Northlake Ave., which has Government contracts.

Mrs. Franck's husband, who was a cabinetmaker at Auburn, Wash., purchased a shipyard on the site of the present plant on Lake Union in 1928.

"We built pleasure craft and did very well," Mrs. Franck said. "Then misfortune overtook us. The plant was destroyed in the 1938 Lake Union shipyard fire. Part of the yard was rebuilt and then Mr. Franck died, a year to the day after the fire."

Mrs. Franck worked with her husband in the plant, and after his death, took it over. The yard was expanded to take care of the increased business. The seventh and last of a series of 65-foot passenger and freight boats, built by her plant, was launched January 9.

The Franck shippard has a contract for ten 40-foot motor vessels and has started work on them.

Tacoma Launches Escort

Another aircraft escort vessel, the Delgada, was sent down the ways from the plant of the Seattle-Tacoma Shipbuilding Corporation in Tacoma January 6. The vessel was christened by Mrs. J. B. Sykes of Seattle, wife of Captain Sykes, who commands the U.S.S. Card.

Supervisors' Club Formed

James Copeland was elected vice president of the Supervisors' Club of the Winslow Marine Rail-



MRS. RUTH FRANCK . . . puts in long hours at her yard, the Vic Franck Boat Company.

way & Shipbuilding Company, Inc., at a dinner-meeting in Seattle January 10. Vic Proulx was elected secretary, and Elmore Ross, treasurer. Nearly 150 foremen, assistant foremen and leadermen working in the Winslow yard, attended.

Guest speakers were Franklin McCrillis, president of the Advertising and Sales Club of Seattle, and Del Mueller, ships' foreman at Associated Shipbuilders.

Octogenarian Engineer

E. L. Franks, in his 80th year, carries on as agent for the Black Ball Line at the Winslow Ferry Dock. Mr. Franks still is interested in ships and seafaring men and has many friends among the commuters who journey back and forth across Puget Sound. For ten years he was mate and engineer of vessels plying the Columbia River. Then he was engineer in ships of the old Pacific Coast Steamship Company, operating between San Francisco and Nome

and other Alaska ports. He left the Pacita Coast Steamship Company in 1901 to a gamize the Lagle Harbor. It at sportation Company. In September, 1927, the company was sold to the Kitsap County Transportation Company. He remained as engineer of the steamship Winslow in the service of the Kitsap Company and then became an employee of the Black Ball Line.

Star Awarded

The Bellingham Marine Railway & Boatbuilding Company has received a renewal of its Army Navy "E" award and the right to place a six months' service star on its pennant. The company, which holds a Navy contract for mine sweepers, was awarded the Army-Navy "E" pennant last July 7 and was the second shipyard in this district to receive the renewal award.

Pilots to Coast Guard

With the rank of lieutenant commander, Puget Sound pilots have been inducted into the Coast Guard Temporary Reserve. They will be in uniform when shifting vessels in the harbor, taking them to sea or bringing them to the Sound.

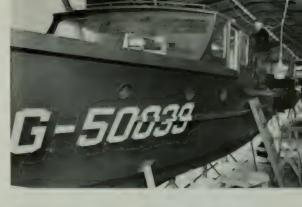
The pilots were sworn in at the office of the captain of the port in Seattle, by Ensign R. M. Tollefson, assistant to the director of the Coast Guard Auxiliary in the Seattle District.

Capt. Clyde Raabe has been enrolled as head of the Columbia River pilots with the rank of commander. He was the first of the Pacific Northwest pilots to be commissioned by the Coast Guard.

New Pier

Construction of the Port Commission's north pier of the Connecticut Street Terminals in Seattle is under way on the old Skinner & Eddy Shipyard site. The pier will require approximately six months to complete and will cost \$2,800,000. The General Construction Company has the contract for the sub-structure. The contract for the building has not been let.

PATROL BOATS nearing completion at the Washington Boat Works on Lake Union.



The pier will be 1000 feet long and 400 feet wide. The dockhouse will include two one-story vargo transit sheds, 960 feet long and 120 feet wide. The pier will be capable of handling a large amount of cargo and will have the latest equipment for freight movement. It is being built with post-war needs in mind.

Elect Port Commissioners

John A. Earley was elected president of the Port of Seattle Commission at the annual meeting January 11. He succeeds Horace P. Chapman, who was elected secretary. Edward H. Savage, Seattle realtor and civic leader, who recently succeeded the late Smith M. Wilson as commissioner from the South District, was elected vice president. Col. W. C. Bickford is general manager of the Port of Seattle.

Earley is serving his third term as port commissioner. He was first elected in 1934, was reelected in 1937 and again in 1940.

Personal Gleanings

Lieut. (j.g.) Frank L. Morris, a former Everett businessman, who took much interest in yachting, has been appointed director of the Coast Guard Reserve and Auxiliary of the 13th Naval District in Seattle. He succeeds Lieut. Comdr. Donald T. Adams, captain of the port in Seattle, who has been relieved of the duties of director of the reserve and auxiliary. Commander Adams continues as captain of the port and security officer. Lieutenant Morris was Coast Guard flotilla commander at

H. A. Shook, who was appoint ed port representative of the Recruitment and Manning Organization of the War Shipping Administration in Seattle last August 15, has returned to the American-Hawaiian Steamship Company as Seattle District manager. He has been succeeded in the Recruitment and Manning Organization by Capt. Roy C. Donnally of Sacramento. Mr. Shook was lent to the Government by the American-Hawaiian Company.

Ensign M. C. Hathaway, a former Los Angeles shipping man, is in charge of recruiting of apprentice seamen for merchant ships in Seattle. He was an importer of cargo from India, Iran, Egypt and Mexico and served on the foreign trade committee of the Los Angeles Chamber of Commerce.

Capt. Alexander M. Peabody, president of the Inter-American Navigation Corporation, has returned to his headquarters in Washington, D. C., after a brief visit in Seattle. Captain Peabody announced on his arrival here that 16 freighters have been acquired on the East Coast for operation by the corporation from the Caribbean to United States ports.

Capt. J. A. Alger, a Coast Guard veteran with more than 40 years' service, was in Seattle recently on a tour of the Coast. He commanded the cutter Chelan from 1931 to 1933, and is a former commander of the Bering Sea Patrol Force.

Harry A. Kirwin, who spent 21 years visiting out-of-the-way corners of the world and then became a Seattle waterfront photographer, is now Yeoman Kirwin, U.S.N., "somewhere in Alaska" on a salvage vessel.

Mews FROM THE PACIFIC SOUTHWEST

by K. M. Walker

More Libertys in 1943

The California Shipbuilding Corporation at its big yard on Terminal Island, opposite Wilmington, is keeping up its regular tempo of Liberty ship deliveries. Scheduled to deliver 15 a month for 1943, the Calship gangs are straining every facility to better this mark. Starting with a 16-ship month in December, they have now set their own quota of a ship every other day, or better, which would give the Maritime Commission 183 Libertys in the year in place of 180.

The improved skill and speed of these gangs through 1942 gives every reason to predict that if supplied with the steel, machinery and equipment necessary, they will come close to delivering 200 ships in 1943.

Terminal Superintendent Passes

Wm. L. (Billy) Robertson, terminal superintendent at Los Angeles Harbor for the Luckenbach Steamship Company, passed away recently, aged 66. Mr. Robertson was an old-timer in Pacific Coast shipping circles. He had been a purser on vessels of the old Pacific Mail, and was with Luckenbach in San Francisco for some years before going to Los Angeles. He is survived by his widow, and a brother, John Robertson, of Los Angeles.

Compressor Specialist

Philip W. Mettling, Cooper-Bessemer compressor expert, stationed at the corporation's Mount Vernon, Ohio, plant for the past several years, has been trans-

ferred to the firm's branch office at 640 East 61st Street, Los Angeles, California.

In announcing the change, Cooper-Bessemer officials reported that Mr. Mettling will continue his work as a compressor calculation engineer. His transferment will bring him in closer contact with the field in that important area, thus expediting the installation, operation, and servicing of Cooper-Bessemer compressors which are critically essential in certain major war industries.

Mettling's broad technical knowledge and experience with large engines will also enable him to assist, as much as time will permit, in the installation, operation, and maintenance of Cooper-Bessemer engines. Cooper-Bessemer Corporation produces marine diesel engines as well as diesel and gas engines for industrial power.

Mettling is a graduate of Purdue University, where he majored in mechanical engineering.

Windjammer Ends Colorful Career

By way of Lisbon, Portugal, on December 5, 1942, came word that the six-masted schooner Star of Scotland had been torpedoed in the South Atlantic on November 26 while on a voyage from Cape Town to a Brazilian port. Full details are not yet available, but it appears that the chief officer was killed while the remainder of the crew was picked up and landed at Mosamedes, Angola, on the coast of West Africa. Meager reports advise that the enemy submarine stopped the schooner at sea and put a boarding party on the ship.

This party thoroughly looted the ship taking all food, some fuel, and all money and documents before sinking the ship.

The history of this colorful old iron sailing vessel is given in its entirety in the September 1942 issue of PACIFIC MARINE RE-VIEW up to the conclusion of her first and only complete voyage as a six-masted schooner. The writer, being responsible for the six-mast, full jib headed rig, is naturally deeply disappointed in the passing of this fine vessel as he had hoped she would make many passages to prove the merits and efficiency of the jib-headed, or so-called Marconi, rig. This design puts the airfoil principle to work to full advantage and embodies tall, narrow sail design. It is the theory of the writer that in most of the old-time sailing vessel designs, the architects followed a rule-of-thumb application of so many square feet of sail area for so many square feet of water plane area in lateral resistance without regard for the most efficient application of the sail area.

They, however, did not have the advantage of wind tunnel tests for air-foil experiments, nor the complete data now available from exhaustive study of the airplane wing. The design of an airplane wing and the design of a sail to drive a vessel tie in very closely. This is proved by the fact that the Star of Scotland, rigged as a schooner of air-foil design and with two thirds of the sail area she had as a four-mast bark, made the 17,000 mile voyage from Aberdeen to Johannesburg in better time than she had ever made a

similar voyage when bark rigged. It is apparent that it is not so much a question of how much sail area is applied that determines the effective drive. Under square rig, she had recorded runs of 320 miles a day or 13,25 knots, but information is not available as to her best day's run with the new schooner rig.

Captain Brennan Missing

On December 17, news reached San Diego that the new Liberty freighter Nathaniel Hawthorne was torpedoed in the South Atlantic, and that her master, Capt. Richard C. Brennan, was missing. Capt. Brennan was very well known on the Pacific Coast and was a close friend of the writer. During World War I he was in command of the naval transport Yale, once a crack Pacific Coast liner, and received the Distinguished Service Cross for meritorious service in this command.

After a number of years' retirement, and with the entrance of the United States in the war, Capt. Brennan volunteered his services to the Maritime Commission and was given command of the Nathaniel Hawthorne, built at the Oregon Shipbuilding Company. While homeward bound on the first voyage, the ship was lost.

Capt. Brennan's wife, Mrs. Naomi Brennan, and three daughters, Katherine, Margaret and Patricia, reside in Portland, Oregon. A brother, Lt. Commander Leo Brennan, is in command of a naval transport; and another brother, Joe Brennan, is port director of San Diego.

Post-War Tuna Boat Design

When the present war came upon us, the Navy immediately took over a large number of the longrange tuna clippers and converted them to naval service. Many of these, in their new garb, have ranged far out into the Western Pacific, and a number have been lost, among these the largest and most modern of the tuna fleet operating in the past out of San Pedro and San Diego. However, with due regard to the operating

record of these 'ig boats it must be admitted that the tuna clipper, like lopsy, just growed. The application of uaval architecture and eigmeeting in their design was at best limited.

The principal criticism of their design, and the one causing the engine at the extreme forward end which necessitates a long line of shafting. Fishing custom requires the stern and fish stowed in compartments at the after end of the vessel. Hence the engine must be placed forward, necessitating a long line of shafting to deliver the power to the propeller at the stern. It has been the accepted custom to install a direct line of shafting to couple the propeller with the power plant, and this has been the bane of the underwriter's exis-

In the past the owners, for the most part Portuguese fishermen not versed in engineering, have stipulated their requirements to the builder, who has followed these requirements. This has resulted in succeedingly larger boats without consideration by either party that the flexibility of a wooden vessel increases as the square of the length, other dimensions being in proportion. The net result is that these boats sag heavily when loaded and hog appreciably when light, but the same line of directly coupled shafting is presumed to accommodate itself to the variations in hull form. The fact that it does not is reflected in the numerous claims for broken line, tail or crank shafting which are due to the fatigue strains set up in the heavily overloaded shaft-

These strains of misalignment, for it is nothing more or less than that, can be readily overcome by the adoption of some more flexible means of power transmission, such as the Silva flexible coupling as made by the San Diego Marine Construction Company for the Emma R. S. and other boats, or by electric power transmission with the generating machinery forward and the propelling motor in the stern, coupled direct to the

tail shatt, or by other means

It would appear that now is the time for underwriters, who are ultimately called upon to pay the bill for damages resulting from this obvious defect in basic design, to convene and draw up a set of requirements with which the tuna boats must comply before they can be regarded as fully seaworthy and satisfactory risks.

Mexican Order Affects Fishing

V new order of the Mexican Government banning all fishing, including the taking of bait, within a two-mile limit between Ensenada, Baja Cailfornia, and Cape Colnett has affected the Mexican and American fishermen alike. This order was issued November 18 by Brig. General Revnaldo Medina. Chief of Staff of the Second Military Zone in Ensenada. This order appears to have affected the Mexican fishing boats more than the American boats, as the latter are in a position to obtain bait before moving into Mexican waters, while the boats local to Ensenada are forced to proceed outside their own local waters before they can take bait. Disobedience of this order will result in seizure of the vessels.

The order applies also to the lobster and abalone fishing in this area, but most of this shell fishing is done outside of the forbidden area.

New Fisheries Building In San Diego

Work on the new fisheries building, vital to the San Diego fresh fish business, which was started November 23, is progressing nicely, and the \$52,000 building, being erected by Kemp Brothers of San Diego, is now rapidly taking form. The 120-foot by 200-foot structure will house all the fresh fish business ousted when the Navy took over the old fisheries building at the foot of E Street. About the time this goes to press, the tenants should be moving into the sorelyneeded quarters across from the Coast Guard Pier, which will be used in part for the berthing of the fish boats.



by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

VIII-Electric Propulsion Equipment (cont.)

Emergency turbine governor control lever: This lever is used only in case the governing system becomes inoperative, and provides a means of opening the governing valve mechanically to obtain a maximum of approximately 50 per cent normal load. As indicated in Fig. 8, the knuckle (126) is slotted so as not to interfere with normal operation of the governing machanism when the emergency lever is in its normal position.

The adjustment between knuckle (126) and rod (127) should provide that the knuckle moves downward 1/2 in. before it contacts the pin (125), in response to moving the emergency lever from the normal position forward to the maneuvering position. At this point the governing valve should begin to crack open. An additional 11/2-in, downward travel of the rod (127) should open the valve (75) sufficiently to admit the flow of steam required for 50 per cent normal load with no extraction, and another ba in. travel should open the valve to admit sufficient steam for 50 per cent normal load with an extraction flow of 6200 lb. per hr.

Note: When making any adjustment in the governing mechanism be sure to provide that the valve (75) is closed before the operating piston (141) reaches its bottom stop.

Low-oil-pressure control: As indicated in Fig. 8, the operating medium for the governing mechanism is oil from the ship's system at a pressure of 2s th. In the line to the pilot valve and operating exhinder there is installed a low-oil-pressure control valve whose operating medium is oil from the turbine-generator bearing-lubricating system. During normal conditions, this bearing oil pressure is applied to the upper side of the diaphragm (156) to hold the valve (161) down in the position that admits oil from the 25-1b line to the upper side of the piston (171). This holds the diaphragm down against the force of spring (167) in the position that causes the valve (172) to close its lower (drain) opening and to keep open its upper (supply) opening.

Loss of bearing oil pressure allows the spring (158) to lift the valve (161) to the position that shuts off the 25-th supply to the top of piston (171), thereby allowing spring (167) to lift valve (172) to close its supply opening and to open its drain. This action shuts off the 25-th supply to the pilot valve and operating cylinder, causing the piston (141) to drop to its bottom position and thereby close the governing valve to shut down the turbine.

Emergency governor and tripping device: The turbine is equipped with a speed-limiting device which acts to stop the turbine in case it overspeeds to 120 per cent normal as the result of failure of the oil-operated governing mechanism. This device consists of an emergency governor and a tripping mechanism, arranged to close the throttle valve in case of overspeed.

The emergency governor is located at the high-pressure end of the turbine and is carried in a hub that is bolted to an extension of the worm that drives the speed governor, as indicated in

Fig. 8a. During normal operation, the centrifugal force of the plunger (4) is counteracted by the force of the compression spring (2). When the turbine overspeeds, the centrifugal effort overcomes the force of the spring and, since its center of gravity is beyond the center of the hub, the plunger (4) moves out and strikes the trigger (5), moving it and unlatching the trip rod (15) so that it is pushed downward by the compression spring (10). This action swings the lever (14) to the left. This lever is connected through shaft (22), lever (20), rod (18), and slotted knuckle (39) to the trip mechanism on the throttle valve. Operation of the tripping device swings the latch (37) to the left, releasing the lever (56) and causing the throttle valve to drop to the closed position.

The stroke of the plunger (4) is ½ in. The clearance between the plunger and the trigger when the turbine is at rest and the trigger latched in position is 1/16 in. Adjustment of the clearance is made by means of shims between the bracket (11) and the cap to which it is bolted. This clearance is fixed at the factory, and the bracket (11) is retained in position with dowels.

Handtripping: The emergency device can be tripped by hand by pressing on the manual trip lever (12), Fig. 8. Pressing down on this button rotates its lever downward about its fulcrum to push down the rod (19) which unlatches the trigger (5). The turbine should always be tripped out either by this method or by operation of the emergency trip lever located adjacent to the control panel. This lever is connected to the throttle-valve trip lever as shown in Fig. 8.

Spring Siler Lever Fin Pint n red Plunger Pin Spring plate Imengency trigger Bracket 64 Pin foring Lever Pin Support rod Ptm Pin Spring collar 124 Pin Johnsettin pleas Chilar Pin Valve stem Spring Slotted knuckle - p . . Ke Glant support Connecting rod Gland Connecting rod

Bush ing Parking Lever Bushing Bushing Spring 7.4 Trip handle Valve nut Knuckle Double-seated valve Rad Upper valve sea! High-speed stop Pan Lower valve seat Low-speed stop Bushing Lever Spring stud

Gland Spring Gland support graft 8 ^ Spring collar Adjusting bushing Athasting nut Lever 140 Piston ring Parking ring Knuckle P13 ' 00 Throttle-screw nut Link 142

Thrittling-screw cap Throttle screw Housing Connecting rod Sphol-face ring Bracket 144 Throttling screw Sea* ring Same as 145 Fan.iwheel 146 Spring Valve body Handvalve manifold Speed governor Yoke 90 Valve body Worm Pilot-valve stem Packing Worm gear 149 Bracket Handwheel Retaining ring Split coupling Valve stem Ball hearing, SKP No.6309

Stop pin 94 Valve stem Housing Trip hook Retainer Shaft VATVA Bushing Lever 154 Slotted knuckle 97 Valve seat Pressure cap Fandwheel shaft 98 Valve seat Diaphragm

 41 Bushing
 99 Valve
 157 Pressure dish

 42 Pinion
 100 Pin
 158 Spring

 43 Support plate
 101 Guide bushing
 159 Adjusting checknut

| Support plate | 101 Guide bushing | 159 Adjusting check | Steam inlet | 102 Nut | 160 Adjusting check | Spool | flange | 103 Gland support | 161 Valve stem | Spool | 104 Gland | 162 Valve bushing |

| Pilot-valve seat | 105 | Packing | 163 | Valve body | Packing ring | 106 | Bushing | 164 | Bottom cap | Packing | 107 | Manifold cover | 165 | Seat ring | Gland | 108 | Setsorew | 166 | Main-valve body | 166 | Main-valve body | 166 | Main-valve body | 167 | Main-valve body | 168 | Main-valve body | 169 | Main-valve body | 160 | Main-valve

Tension spring Sleeve 167 Spring Lever Washer Piston ring Sliding nut Valve 169 Cylinder Link Valve seat Cylinder cover Connection piece Connection piece Piston

E 4

Latching-up lever

Screw spindle 115 Link 173 Dropleg Double gear 116 Pilot-valve bushing

Pin

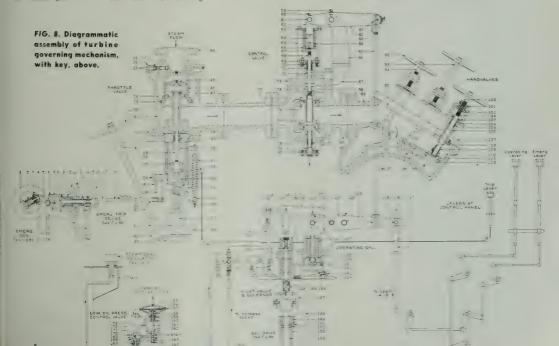
Resetting. To record the action of an oration of a hort tripped to hard or have a proceed as to lows.

I have the handwheel of the trast to calve in the chockwar discontinual. This will take the fall of the factor of the valve spindle and allow the fatch on the through valve to one or

2 Move the resetting handle (16), Inc. 8, back as far as it will an and then return it slowly to the latched position. This will cause the latch at the throathe to organic the nation the valve stem so that the throathe valve can be opened. It will also return the tragger (37) to its position, and batch the trip rod (15) and the resetting handle (16) in the backed position. The resetting may be started without waiting for the turbine to come to rest, but under no condition should the resetting be started until after the speed has dropped somewhat below the normal rated speed.

3. Steam may now be admitted to the turbine by turning the handwheel of the throttle in the counterclockwise direction. Turn the handwheel to its extreme travel and then back it off a half turn.

Adjustment for tripping speed: Adjustment of the spring compression of the emergency governor may be made with a socket wrench, the pins of which engage the slots in the adjusting bushing (23), Fig. 8a. This bushing is locked in position by staking over the edge of the rim into a notch in the hub. To raise the tripping speed turn the bushing counterclockwise; to



Main valve

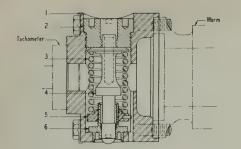


FIG. 8a. Enlarged view of emergency governor.

- 1 Casing
- 2 Cap 3 Spring
- 4 Plunger
- Adjusting nut Adjusting bushing

lower turn it clockwise. After any adjustment is made the bushing should be staked as before.

Throttle valve. This valve has two distinct and separate functions: first, to provide hand-control throttling of the steam when starting and bringing the turbine up to speed; second, to act as a quick-closing valve when tripped by hand, or as an emergency valve when tripped automatically.

When steam pressure is on the line there is always a closing pressure acting on the valve spool, tending to force it to its seat. For closing the valve, this pressure is supplemented by the weight of the valve parts and the pull produced by a spring (51), Fig. 8.

The trip mechanism consists of a trip hook (37) that releases the throttle-valve mechanism to close when the emergency device is released.

When the valve is shut, either latched or unlatched, there is full line pressure in the cylinder above the valve spool (46); this pressure is obtained by letting steam enter through the throttling screw (27) from the inlet side of the valve.

The valve cannot be opened until the latching arrangement has been set. To set the latching arrangement, rotate the handwheel (30) clockwise. This will rotate the screw spindle (57), screwing it into the valve-stem nut (53) which is connected to the pilotvalve stem (33). This action raises the latching-up lever (56) to the position where it is held in place by the trip hook (37). After the latching lever has been engaged with the trip hook, rotate the handwheel in the counterclockwise direction; this raises the valve-stem nut and the valve spindle to lift the pilot valve (33) from its seat

pilot valve is opened, but before the main spool is unseated, the high-pressure steam from the cylinder discharges through the pilot valve and the ports located in the spool neck below the pilot seat to the outlet of the throttle valve.

The pressure in the cylinder above the main spool and pilot valve is thereby reduced to a fraction of the line pressure, as the pilot valve is graduated so that it will pass more steam than can be fed into the cylinder at the throttling screw (27).

Installation: On all new installations, to prevent damage to seat faces from pipe scale and other foreign matter, it is important that the pipe line be thoroughly blown out with steam before the valve is placed in position. To prevent excessive strains and

(47) in the valve spool (46). When the pilot valve is raised from its seat, it engages the spool to raise it from the main steat (20). When the

weight distorting the valve body, provision must be made for properly supporting the supply pipe close to the valve.

Operation: The turbine should always be stopped by tripping the valve shut and the valve should be left in this unlatched or tripped position until the turbine is to be warmed up again. If the valve is immediately relatched and the wheel screwed hard shut, contraction strains will develop in both spindles, which will overload them as well as the sliding-nut thrust bearing and latching lever. This is sure to result in broken parts.

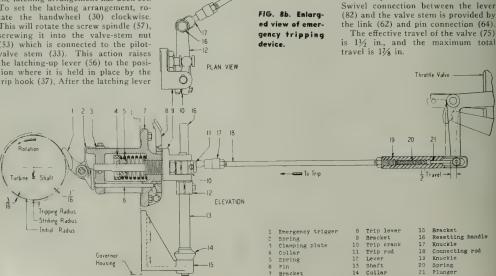
To close the valve, trip the trip rod by operation of the emergency trip lever at the control panel. The main valve spool and all moving parts connected thereto are all unsupported so that their weight plus the steam load on the stem, plus the pull of the closing spring, will cause the valve to close. This action takes place whether the valve is full open or only partially open.

The valve will also be closed by the overspeed tripping mechanism when the emergency governor operates.

To close the valve without tripping, rotate the handwheel clockwise until the main spool and the by-pass pilot valve are seated.

Control valve. The control valve is located in the steam line between the throttle valve and the turbine handvalves, as indicated in Fig. 8, and operates in response to the turbines governor to determine the flow of steam to the turbine during automatic operation. This valve is double-seated, spring-closed, and piston-operated by the governing mechanism. Packing against leakage is installed at each end of the valve stem, and a connection to drain is provided at the lower end. Swivel connection between the lever (82) and the valve stem is provided by the link (62) and pin connection (64).

is $1\frac{1}{2}$ in., and the maximum total travel is $1\frac{7}{8}$ in.



Oil should be applied occasionally at the fittings provided for the binge jons on the lever (82)

Handvalves. The three handvalves shown in Fig. 8 permit adjustment of the steam-admission area to the miststage nozzles of the turbine, beyond the 10 no zle ports supplied by the permanently open passage in the handvalve manufold (89) There are 8, 4, and to nozzle ports, respectively, under the handvalves, beginning with the valve at the left facing the head end or the turbine

The purpose of the handvalves is to permit adjustment of the nozzle area to the minimum area required by the steam flow for a particular operating condition. Experience will indicate the best combinations of handvalve adiustment for the particular load or speed conditions common to the ship. The best economy is obtained when the least amount of throttling takes

Pilot valve and governor. The speed governor (147) is driven from the high-pressure end of the turbine shaft through the worm (148) and worm gear (149) at a speed of about 600 rpm. The work that the governor does is limited to moving the pilot valve (117) with relation to ports in the bushing (116). The connection between the governor and the pilot valve is through a flexible spring (146). A fixed relation between the governor

Governor housing

Bushing

Worm gear

Shaft

Ball bearing

Retaining ring

Oil-well plug

Adjusting stud

Bushing

Cover

Worm

Gasket

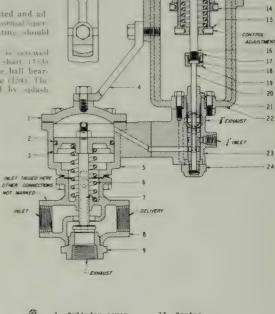
weight arms and the pilot valve is maintained through a povot real (148) whose ends test in hardened pivot bearings. The peror bearings may be renewed, althou, by a salvisable to renew the covernor and pilot valve as a unit.

The governor is calibrated and ad justed at the factory nor normal oper ating speed, and this setting should not be disturbed

The governor assembly is serewed to the end of the drive shart (183) which is supported by the ball bearing (151) and enide bearing (154). The ball bearing is lubricated by splash

FIG. 8c. (At right) Pilot-operated. three-way valve for low-pressure control.

FIG. 8d. (Below) Governor-drive assembly.

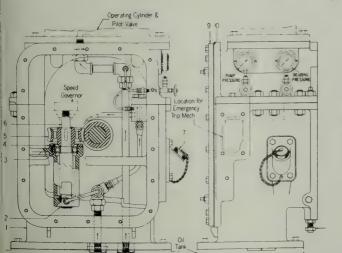


- Cylinder cover Piston ring Piston Brace Cylinder Spring Poppet Main valve body Bottom seat ring 10 Diaphragm Pressure dish
- 13 Spring Adjustor check nut 14 Control adjustor 16 Operating stem 37 Stem connection Valve-stem button 19 Connection nut

& CONTROL COM

Valve stam 21 Valve bushing 22 Dropleg

23 Valve body Pressure cap Bottom cap



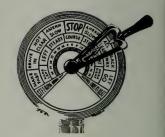
from an oil nozzle directed into the worm-gear mesh, and the guide bearing is forced lubricated through an oil pipe connected into the line that supplies the oil nozzle.

Operating cylinder. The piston (141) in the operating cylinder operates in response to movement of the governor pilot valve to determine the position of the governing valve. This piston is spring-loaded by the spring (137), and flexibility of motion is obtained by letting the rod (119) rest in the bearing block (139). Any undesirable operating characteristic of the piston may be remedied by adjustment of the throttling screw (144).



Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A DEPARTMENT FOR DECK OFFICERS

by "The Skipper"

Questions Welcomed, Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Letters from the Ships

Dear Skipper:

Is it a compulsory requirement to place the name of the vessel on the bow of the ship? What does the law have to say regarding the home port of the vessel as marked on the stern? We have been looking through the law book and can find only the one requirement regarding the marking of the vessel's name on the outside of the pilot house.

I hope you will be able to find space in "Steady As You Go" to give us an answer to our question. Yours truly,

H. J. K.

ANSWER

It is not at all surprising that you can not find the statute requiring the vessel's name to be placed on each bow of the vessel in addition to on each side of the pilot house. These requirements are contained in two separate and distinct statutes. The first statute is to be found in title 46, section 46, of the Code of Laws of the United States, and requires the name of the vessel to be marked on the bow and the home port and the name of the vessel also to be marked on the stern of the vessel.

This statute dates back to the Act of December 31, 1792, and was amended in 1897 and now reads as follows:

46 USC 46. Names and home ports marked on the bow and stern. The name of every documented vessel of the United States shall be marked upon each bow and upon the stern, and the home port shall also be marked upon the stern. The names shall be painted or gilded, or consist of cut or carved or cast roman letters in light color on a dark ground, or in a dark color on a light ground, secured in place, and to be distinctly visible. The smallest letters used shall be not less in size than four inches. If any vessel shall be found without these names being so marked, the owner or owners shall be liable to a penalty of \$10 for each name omitted.

The other statute referred to is a later enactment dating from February 28, 1871 and reads as follows:

46 USC 493. Name of steamer exhibited. Every steam vessel of the United States, in addition to having her name painted on the stern, shall have the same con-

spicuously placed in distinct, plain letters of not less than six inches in length, on each outer side of the pilot house, if it has such, and, in case the vessel has side wheels, also on the outer side of each wheel house (or paddle wheel box); and if any such steamer is found without having her name placed as required, she shall be subject to the same penalty and forfeiture as provided by law in the case of a vessel of the United States found without having her name, and the name of the port to which she belongs, painted on the

It is interesting to note:

- (A) On vessels called "double enders" the letters prescribed by the statute may be placed on the parts corresponding to the bow and stern, and on vessels with sterns not affording sufficient space for letters, they may be placed on adjacent parts, in both cases so as to conform to the law as closely as possible, and so that the hailing port shall be marked on one end of the vessel.
- (B) Scows, barges, or other vessels "scow built" or with square bow may be marked on the bow instead of the side where such marking would be speedily obliterated by chafing against other vessels or docks.

(C) Documented yachts are required to have their names and hading ports placed on some conspicious part of the hull

OUESTION

What is meant by the "home port" of a vessel?

ANSWER

A vessel's home port is that port of documentation which has been fixed and determined by the owner of the vessel with the approval of the Department of Commerce. It is also the port at which the vessel's permanent documents issue, but it must appear in all documents whether they are permanent or temporary.

It is desirable that the home port be at or nearest the place where the vessel business of the owner is conducted, but it need not be in the state where the owning company is incorporated. If the owner desires to have the home port elsewhere, an application accompanied by a detailed statement setting forth the reasons shall be forwarded to the Department of Commerce for approval.

OUESTION

How can the name of a "documented vessel" of the United States be changed?

ANSWER

A new vessel is registered under the name selected by her owners and must continue to bear that name unless permitted to change it. By an Act of Congress approved on February 19, 1920 changes of name may be approved by the Department of Commerce if there is good and sufficient reason for so doing. Before a change of name can be authorized, the owner must present to the Department of Commerce all evidence concerning the vessel's age, condition, where built and any pecuniary liability of the vessel as may be deemed necessary to prevent injury to public or private interests. The obvious reason for this requirement is to prevent imposition upon the public by disguising old worn-out vessels under a new name. The name of a documented vessel shall not be changed except with the consent and approval of

the Department of Commerce, under penalty of barbature. The application for change of name shall be executed under eath by the owner of the vessel, addressed to the Director of Marine Inspection and Navigation, and submitted in duplicate to the collector of customs at the home port of the vessel.

The application must state the change desired, the reasons there for, place and date of build, official number, rig, gross tonnage, and the name or names of the owners of the vessel. It must state in detail a list of all liens, mortgages, etc., on record against the vessel, and the consent of the mortgage or other beneficiary under each lien or mortgage must be submitted in writing with the application.

Application under the new name for the approval of the home port must also be submitted in the case of change of ownership or change of home port only.

The order for the change in name must be published in some daily or weekly paper at or nearest to the port of documentation, in at least four consecutive issues. The cost of procuring evidence and all advertising must be paid by the applicant.

Copies of the newspaper in which the advertisement appeared, together with a receipt for the payment of the cost thereof, shall be furnished by the applicant to the collector of customs, and by him forwarded to the Director of Marine Inspection and Navigation

QUESTION

What is the fee, if any, for changing a vessel's name?

ANSWER

When the name of a vessel is changed, the following fees are to be paid by the owners of vessels to the collector of customs, to be deposited in the Treasury by such collectors as navigation fees:

For vessels 99 gross tons and under, \$10

For vessels 100 gross tons and up to and including 499 gross tons \$25

For vessels 500 gross tons and up to and including 999 gross tons, \$50 For vessels 1000 gross tons and up to and including 4000 gross tons, 875

For vessels 5,000 gross tons and and over, \$100

QUESTION

What is a "documented vessel" of the United States?

ANSWER

The word "vessel" within the meaning of the navigation laws, includes every description of watercraft or other artificial contrivance used or capable of being used as a means of transportation on water, but does not include seaplanes or aircraft.

The term "documented" means registered, or enrolled, or licensed under the laws of the United States

Before a vessel of the United States can engage in trade and commerce, she must be documented and in possession of either a certificate of register, consolidated enrollment and license, or a li-

What vessels are registered?

A certificate of registry is required for vessels of the United States engaged in the foreign trade, and is permitted to vessels engaged in the domestic trade, under the requirement of entering at the custom house at every port of arrival. The register describes the vessel's size, and gives evidence of nationality, and all data as to owners, home port, etc. Registers are valid for any length of time until a contingency arises requiring their surrender, such as the vessel being sold, lost or broken up, or being altered in any way. The ship's register must always be deposited at the custom house at the time of entry.

QUESTION

Are American vessels engaged in foreign trade on the Great Lakes required to be registered the same as an ocean-going vessel engaged in foreign trade?

ANSWER

No, such vessels are exempt from being registered; an Act of Congress amended and approved on February 27, 1877, states as follows:

(Page 79, please)

Keep Posted!

NEW EQUIPMENT AND MACHINERY FOR YARD, SHIP AND DOCK

NEW CORE PLANT

Increases the Foundry Efficiency and Output

HE NEW CORE department at the plant of The Cooper-Bessemer Corporation at Mount Vernon, Ohio, one of the nation's oldest diesel and gas engine manufacturers, is illustrative of the contribution of modern foundries in speeding up the war production effort.

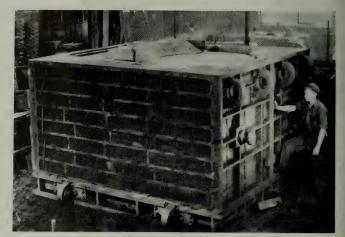
Just completed at a cost of \$300,000, as part of a total \$750,000 Defense Plant Corporation program, the new core building will embrace some of the latest methods of handling core sand by the carload in the most direct manner.

The plant was built to relieve the overcrowded condition which has prevailed for months in the corporation's foundry, busy turning out engines and compressors for the Government and strategic war production industries. The corporation handles a tremendous tonnage of Mechanite Metal casting for engines and compressors, some of which weigh over 60,000 pounds.

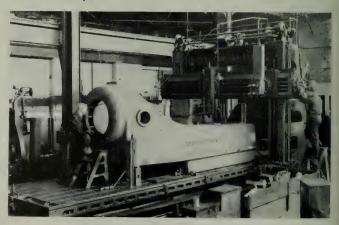
So, all the facilities in the new core plant were built on a large scale. The floor space is 140 feet long and 120 feet wide.

Underneath the floor, are huge pits for the storage of the core sand as it comes in on hopper-bottom freight cars. A special spur track was constructed alongside the building to bring the cars right to the door of the core plant.

The pits open underneath the tracks, and as the cars are pulled



LOW-PRESSURE STEAM CYLINDER drag at Cooper-Bessemer foundry showing cores in place.



CASTING OF ENGINE BED of big Cooper-Bessemer compressor is illustrative of the size of the various jobs done in the foundry.

up, the sand can be dumped without delay, permitting immediate release of the cars for other shipping. Previously, the sand had to be removed from the freight cars

by means of a steam shovel and then placed into bins.

From the extension of the pits inside the building, the sand is lifted by a skip hoist and dumped



GORDON LEFEBVRE Vice president and general manager of the Cooper-Bessemer Corporation.

directly into the sand muller. From the muller, the sand is picked up and carried to where it is needed by means of electric trucks.

When these two methods of transfering sand into the core plant are compared, the great amount of time saved becomes clearly evident. Newer methods of handling sand in foundries as well as improvements in methods of molding have greatly stepped up foundry efficiency.

The core plant has seven new ovens for core drying. Four of these are constructed on a scale to accommodate cores for the largest Cooper-Bessemer compressors. Each large oven is 25 feet long, six feet wide, and 10 feet high. The three others are 13 feet long, six feet high, and seven feet wide.

The ovens are fired by natural gas. To speed up the drying, the combustion process in the ovens is such that the cores are not exposed to the moisture given off by the flames. The combustion system is of the recirculating type, with automatic temperature control. Thus, temperatures can be accurately maintained with an extremely narrow margin of variation.

The ovens are made of steel, in-

sulated by rock wood. This is the most modern form of oven construction. It affects excellent in sulating characteristics, resulting in fuel savings, case and speed of creeting, and simplicity of main tenance. If the need over arises, this type of construction permits portability.

The cores are carried into the ovens on cars running on tracks designed to carry exceptionally heavy loads.

Bonches for the workmen are arranged so they can handle a large quantity of sand in a very short time in the construction of the smaller and more delicate cores. Over the benches are sand hoppers, each to serve two men.

The hoppers are provided with feeding devices which permit the workmen to measure out the proper amounts of sand with the smallest delay. The hoppers are transported by means of a crane.

The plant has the best available lighting and ventilation facilities and is modern in every detail. In fact, it is considered one of the most modern core shops in the country today.

Flying Fortress Life Raft

An improved seven-man rubber life raft, which will give aviators forced down at sea greatly added

protection and comfort, including a square-rigged sail, is now in production in a New England plant of United States Rubber Company

The local was designed by the Equipment Laboratory of the X X F Material Center, Wright Field, working in closest collaboration with the company, and will be put into use on our Flying Fortresses. Army Air Corps engineers expect it will extend the length of time flyers can remain alive at sea.

Numerous improvements, both in construction and equipment, grew out of the experience of those who have been rescued at sea after spending weeks in inflatable boats.

The new design not only gives more space, but makes the boat less tippable and more seaworthy. A fabric sea anchor will be used to keep the nose of the boat into the wind and thus reduce the possibility of tipping caused by heavy seas.

Two ten-foot lengths of rope are tied on opposite sides of the boat to aid in "righting" the raft if it inflates wrong side up or is over-turned.

A horizontal bulkhead divides the boat into upper and lower chambers so that the entire boat (Page 92, please)



UNITED STATES RUBBER CO. NEW 7-MAN LIFE RAFT

Residual Stresses

IN WELDED SHIPS

RESIDUAL OR locked-up stresses still remain the most important and controversial question among those responsible for the efficiency of large welded plate and shape structures which cannot be stress-relieved.

It has been asserted that such stresses tend to distribute themselves when subjected to external loading and even to disappear in the course of time. It has also been authoritatively stated that "the critical time in a welded structure is a period of somewhat indeterminate length beginning immediately after the welded joint is made," all of which would be very comforting, especially if the word "limited" could properly be substituted for "indeterminate."

We do know that these stresses are the inevitable effect of expansion and contraction resulting from the heating and cooling of the weld and adjacent base metal and cannot be eliminated entirely. Since they can only reduce themselves by the plastic yielding of the deposited metal and the parent material, the property of ductility both for the weld and base metals becomes of paramount importance.

The application of the intense concentrated heat during the arc welding process results in expansion of the base metal, followed by cooling and shrinkage of both the base and deposited weld metals. Stresses are thereby set up which are evidenced by distortion, the degree of which depends on the amount and nature of the restraint. If the parts being welded are free to move, the distortion is a maximum; if they are unduly restrained in order to prevent distortion, the locked-up stresses may

by David Arnott

Vice President and Chief Surveyor,

American Bureau of Shipping

be increased to an extent which may prove serious.

Under bi-axial stress, even in a ductile steel, normal elongation is hindered and under tri-axial stresses, which may occur in heavy plating, any deformation is extremely unlikely. It is under these multi-axial stress conditions that the material is most likely to fracture in a brittle manner with slight deformation.

That cracks have developed in the plating of our welded ships during construction is generally known, and while such occurrences have been rare, they are naturally and properly cause for concern as evidence of the magnitude of the stresses that can be locked up in a welded structure.

There are in general three main causes for such defects:

- (1) The unsuitability of the parent material for a welding technique which does not include preheating or stress-relieving due to high carbon segregation with consequent lack of ductility.
- (2) The use of a wrong welding sequence.
- (3) Welding under cold weather conditions, especially if the temperature has dropped suddenly after welding; i.e., accelerated rate of cooling.

It is difficult with our present knowledge to place the above causes in the order of their relative importance, but, if all three conditions exist simultaneously, one need not look any further for the cause of the trouble. The facts with regard to (1) and (3) are easily established, but it is not always so easy to determine just how and in what order the welding in the vicinity of the failure was carried out, especially where there is that division of responsibility among the supervisors incidental to the working of three shifts and where the night shift invariably gets the blame. It is perhaps too much to expect a welder to admit that he has deliberately departed from a carefully prepared sequence to which he was instructed to adhere rigid-

Our surveyors have explicit instructions to report the occurrence of cracked welds and plates, and it is rather remarkable and perhaps significant that no case has been reported from any of the yards during the summer.

Actual Service Tests

While there are certain important advantages inherent in welded construction such as reduced weight and superior tightness which can be obtained apparently without any increase in initial costs, it is somewhat early to claim definite all-around superiority over the riveted ship until such times as our all-welded ships have been subjected to the acid test of service conditions. However, an analysis of survey reports of damage resulting from collision, grounding, etc., would go to show that the welded ship is doing very well indeed. Some of these welded ships have recently been drydocked on account of some minor casualty and, while both plating and framing were found buckled in way of the damage, there was no evidence of any leakage, and no immediate repairs were necessary,

STEADY AS YOU GO

Continued from page 75

46 USC 258. Enrollment of vessels on frontiers. Vey vessels of the lented States may gating the waters of the northern, northeastern, and northwestern frontiers, otherwise than by sea, shall be enrolled and heceused in such form as other vessels such curollment and heceuse shall authorize any such vessel to be employed either in the coasting or foreign trade on such frontiers and no certificate of register shall be required for vessels so employed.

QUESTION

What is meant by "Enrollment and license"?

ANSWER

It is essentially the same type of document as the register. An American vessel engaged in the coastwise trade will be in possession of a "Consolidated Enroll ment and License." This document is granted to vessels of 20 tons and over. Originally, the enrollment and license were issued as separate documents; due to the fact that the particulars recited on the form of a license are in many instances similar to those contained in the form of an enrollment; the Secretary of Commerce was authorized, in 1906, to consolidate the enrollment and license into one document to be known as "Consolidated Enrollment and Li-

An enrolled vessel is subject to forfeiture if she proceeds on a foreign voyage by sea without first becoming a registered vessel.

Vessels of less than 20 tons, if engaged in the coasting trade or the fisheries, are "licensed."

Pleasure yachts privately owned are "licensed" and are permitted to travel between foreign and domestic ports, but are not allowed to transport cargo or passengers for hire.

These three documents are known as "Marine Documents."

QUESTION

What vessels are permitted to be documented?

ANSWER

A vessel owned by citizins of

the Legaci State of V. conter things an edunder the lower the Linne States of the ex-State of the Linnar the President and whether directors of which are American thousand, may be documented if the vessel is either

- (1) Built in the United States
 (2) Captured by citizens and
- ordenned as a prize of war
- 3) Forfested for breach of the laws of the United States.
- (4) If built abroad; certified by the Department of Commerce as safe to carry dry and perishable cargo.

Foreign built vessels are not allowed to engage in coastwise trade, except:

- (1) Foreign built vessels which were registered and owned by citizens of the United States on February 1, 1920, and at all times thereafter.
- (2) Vessels wrecked on the coasts of the United States, purchased and repaired by citizens at a cost equal to three times the value of the vessel as wrecked.
- (3) Those authorized by special act of Congress.

QUESTION
What is meant by "coastwise trade"?

ANSWER

Coastwise trade is trade between continental ports of the United States, either directly or by way of a foreign port. The test is whether the trade is between ports of the United States as part of a single voyage irrespective of the nationality of the vessel. The character of a voyage, whether foreign or domestic, is determined by its terminus. This does not prohibit a vessel putting into an American port for fuel or supplies. Trade between the East and West by way of Panama Canal or Cape Horn, is deemed to be coastwise trade. Trade between the United States and Hawaii, Porto Rico and Alaska is also coasting trade.

A foreign vessel is not allowed to carry passengers and/or cargo between two or more American ports, not even if she touched at a foreign port while en route between two American ports.

RESIDUAL STRESSES IN WELDED SHIPS

Continued from page 78

fortunately so in the worth epiesent emergency conditions to invetted ship which had suffered a similar cosmality would early mobably have had to be held in drydock for the carrying out of at least temporary repairs. The nature and extent of damage sustained as a result of enemy action are usually such as to render any real comparison between the riveted and welded ship a matter of some difficulty, especially where one is limited to written reports. The present restrictions on the taking of photographs places the responsibility on the proper authorities for taking steps to ensure that complete pictorial records and other relevant information with respect to such damages will be available after the war, as data of this kind will be invaluable in the interests of future progress in the

Research

While the need for absolute concentration on the war effort in the interests of maximum production has naturally had the effect of slowing up welding research, investigation being carried out under the auspices of the Welding Research Committee of the Engineering Foundation, which is sponsored by the American Welding Society. For example, work is now under way at three of our universities on a program of research, which it is hoped will definitely establish optimum welding procedures and the welding conditions, including plate temperafrom cracking in the welds and in the heat-affected zone of the base metal. This particular program will be of direct value and benefit to the shipbuilding industry and is being financed in part both by the Maritime Commission and the American Bureau of Shipping.

Extract from a paper "Some Observations on Ship-Welding," read at annual meeting of The Society of Naval Architects and Marine Engineers, November 12, 1942.



On the Ways of SHIPS IN THE MAKING

Jones Construction Co. To Manage Brunswick

The Maritime Commission announced approval of an arrangement between the Brunswick Marine Construction Corporation of Brunswick, Georgia, and the J. A. Jones Construction Co. Inc., of Panama City, Florida, whereby the Jones Company will take over management of Liberty ship construction work being done in one of the Brunswick yards. The arrangement was effective February 1.

The Brunswick Company will retain an interest in the Liberty ship contract and continue active management of its other shipyard at Brunswick in which tugs are being built for the Commission, the announcement stated.

The Brunswick and Jones Companies were awarded contracts to build Liberty ships by the Commission in March and April of 1942. Both have six-way yards and each has completed construction of facilities. Ships are under construction on all twelve ways.

The Jones Company now takes over responsibility for the construction of 63 Liberty ships, 33 in the Panama City yard and 30 at Brunswick.

New Standard Oil Tanker

One of the world's largest tankers, the R. C. Stoner, recently launched for the Standard Oil

Company of California, will be ready for active service in March, it was reported.

Built at the Sun Shipbuilding & Drydock Company's yards at Chester, Penn., it is the second such tanker launched for the company within the past three months. A sister ship, the J. H. Tuttle, was launched last October.

She was christened by Mrs. R. C. Stoner, wife of the company's director and vice president, in whose honor the vessel was named. Mr. Stoner accompanied his wife East for the launching ceremony.

Commission Ousts Officials Of Marine Maintenance Corp.

Rear Admiral E. S. Land, Chairman of the United States Maritime Commission and War Shipping Administrator, announced on January 27 that certain grave irregularities had appeared in connection with the audit of the repair operations of the Marine Maintenance Corporation, as subsidiary of Sword Line, Inc. Information regarding such irregularities was forwarded by the Maritime Commission to the War Frauds Unit of the Department of Justice for appropriate action about two weeks ago.

In view of the disclosures by Maritime Commission auditors and the indictment of the company, its president and its former treasurer recently, the War Shipping Administration has canceled its general agency agreement with Sword Line, Inc., revoked all vessel allocations heretofore made, terminated existing time charters of Sword Line vessels, requisi-



AFLOAT IN ITS BASIN, S. S. General Tasks H. Bliss photographed recently just before its christening at Richmond Shipyard Number Three.

PACIFIC MARINE REVIEW

tioned all such vessels on a bare boat basis, and allocated all Sword I me vessels, including vessels previously allocated under the General Agency Agreement to a new agent to operate for the account of the War Shipping Administration.

It was also announced that the Commission and the Administra tion have demanded the resignations of the president and directors of the Marine Maintenance Corporation, the designation of a general manager satisfactory to the Commission, and the placing in trust with a satisfactory trustee of all the stock of Marine Mainte nance Corporation, including vot ing powers, with the understanding that the new general manager will have full authority to continue present ship construction and repair operations until a permanent plan of operation has been developed and promulgated, the Commission retaining complete freedom of action in the interim.

39 Wooden Tugs Awarded by Commission

A contract for the construction of four 65-foot wooden tugs, has been awarded to Arthur G. Blair, Inc. of Yonkers, New York, the Maritime Commission announced on January 30. The contract was awarded on a fixed-price, lumpsum basis, to cost \$41,032 each.

On January 25, the Eureka Ship Builders, Inc., Eureka, Calif., was awarded a contract to build six of these tugs at a cost of \$35,970 each.

Contracts were also awarded on the same day for the construction of 29 similar tugs in various parts of the nation. The tugs are of the V2-M-AL1 design and are the first of their type to be built by the Commission.

Carfloats to Dravo

Ten welded steel carfloats for service in New York harbor are being constructed at The Dravo Corporation, Pittsburgh, Pa., for the Pennsylvania Railroad Co. The first three are expected to be placed in service from the Wilmington, Del., yard very shortly.





SALVAGE VESSELS

BARS 10 (above), second large savage vessel built at the Bellingham Marine Railway and Boatbuilding Company, Bellingham, Washington, went down the ways January 23, despite a severe snow storm. Sponsor of BARS 10 was Edna Lind, daughter of Mr. and Mrs. Peter Lind. Soon after the launching of the vessel, a kee was laid for the construction of ARS 29, a salvage ship of similar construction for the United States Navy. Mr. Lind is superintendent of BARS construction.

LINCOLN SALVOR (below), the first of the BARS type built by Bellingham Marine Railway, was launched late in 1942 and is here seen in the water just after launching. The sponsor, Miss Prudence Talbot, daughter of Mr. and Mrs. A. W. Talbot, smashes the bottle of champagne over the rudder of the vessel as it moves down the ways bow first. Mr. Talbot is owner of the yard.



More C-3s

An allotment of 19 more C-3 cargo ships has been awarded to the Western Pipe & Steel Company, South San Francisco, California, by the Maritime Commission.

Tug Contract

Four steel, diesel-equipped harbor tugs will be built by **Hickinbotham Brothers**, **Ltd.**, Stockton, Calif., for the War Department Service of Supplies.

106 Vessels Delivered in January

American shipyards, for the second consecutive month, added more than a million tons of shipping to the Victory Fleet, with the delivery of 106 vessels totaling approximately 1,008,400 deadweight tons in January, the Maritime Commission announced.

The temporary decline in January from December's record high of 121 ships was attributed to previous shortages of steel and delays in completion of the higher type propulsion equipment, as well as severe weather conditions which affected production particularly in the northern yards.

Of the 106 ships delivered in January, 79 were Liberty ships, four C-type vessels, five large tankers, 14 special types, one ocean-going tug, and three harbor tugs.

At the same time, the Commission announced that the average building time of Liberty ships was cut to 52.6 days in January as compared with 55 days in December. This marks the thirteenth straight month that American shipbuilders have cut the building time of these vessels from keellaying to delivery. The three Liberty ships delivered a year ago, in January 1942, averaged 241 days.

West Coast yards held the lead in ship production by delivering 54 vessels, East Coast, 36 and the Gulf Coast, 16.

The most productive yard in the Nation was California Shipbuilding Corporation, Wilmington, California, which delivered 14 Liberty ships into service. Bethlehem-Fairfield Shipyard, Inc., Baltimore, Maryland, took second place with five Liberty ships and eight special types, and Oregon Shipbuilding Corporation, Portland, Oregon, was third with 12 Liberty ships.

Vast Fuel Oil Fleet

The War Production Board has approved a program for construction of more than 1000 tugs, towhoats and barges to haul fuel oil up the East Coast, according to

JANUARY LIST OF DELIVERIES

SHIPYARD	NO. OF SHIPS	TYPE OF SHIP
Alabama Dry Dock & Shipbuilding Co Mobile, Alabama	. 2	Liberty
Avondale Marine Ways, Inc	. 1	Seagoing Tug
Bethlehem-Fairfield Shipyard, Inc	. 5 8	Liberty Special Type
Bethlehem-Sparrows Point Shipyard, Inc Sparrows Point, Maryland	. ž	Tankers
Brunswick Marine Construction Corporation . Brunswick, Georgia	. 2	Harbor Tugs
Ira S. Bushey & Sons, Inc	. 1	Harbor Tug
California Shipbuilding Corporation Wilmington, California	. 14	Liberty
Delta Shipbuilding Company, Inc	. 5	Liberty
Federal Shipbuilding & Dry Dock Co	. 1	C-2 Cargo
Houston Shipbuilding Corporation Houston Texas	. 6	Liberty
Ingalls Shipbuilding Corporation Pascagoula, Mississippi	. 1	C-3 Cargo
Kaiser Company, Inc	. 6	Special Type Liberty
Marinship Corporation	. i	Liberty
Moore Dry Dock Company	. 1	C-2 Cargo
North Carolina Shipbuilding Company Wilmington, North Carolina	. 9	Liberty
Oregon Shipbuilding Corporation Portland, Gregon	. 12	Liberty
Pennsylvania Shipyards, Inc	. 1	C-1 Cargo
Permanente Metals Corp. (Richmond Shipyard No. 1 Richmond, California) 7	Liberty
Permanente Metals Corp. (Richmond Shipyard No. 2 Richmond, California) 10	Liberty
South Portland Shipbuilding Corporation South Portland, Maine	. 2	Liberty
Sun Shipbuilding & Dry Dock Company Chester, Pennsylvania	. 3	Tankers
Todd-Bath Iron Shipbuilding Corporation South Portland, Maine	. 3	Liberty
Total	. 106	

the plans developed by the Office of the Petroleum Administrator. The program calls for construction of 21 steel-hulled, 2000-hp towboats; 100 600-hp tugs; 500 600 barrel-capacity barges, and 400 dry cargo barges, to be substituted for existing steel barges, which will in turn be converted into oil barges.

Barge Contracts

Under terms of a new contract award, the Phoenix Engineering Company, of Milwaukee, Wis., will construct 20 knocked-down wooden barges, 78 feet long, at its Baltimore Plant on a fixed-price, lump-sum basis of \$11,964.54 each. The first ten are to be delivered 75 days after notice of award, and the second 10, 100 days after notice.

'Three 210-foot steel oil barges

will be built by the Ingalls Shipbuilding Corp. at Birmingham, Ala. for the Quartermaster Corps.

The St. Louis Shipbuilding & Steel Company, St. Louis, Mo., has a contract for 15 crane barges for the Quartermaster Corps.

Vickery Presents "M" Award At Tenth Launchina

It was a red-letter day at the Marinship yard in Sausalito January 28, when Rear Admiral Howard L. Vickery, Vice Chairman of the United States Maritime Commission, personally awarded the Maritime "M" pennant, the Victory Eagle flag and the Maritime labor merit badges in recognition of Marinship's 1942 production record. The ceremony preceded the launching of the S.S. Andrew (Page 96, please)



MARINSHIP RECEIVES "M" AWARD



MARITIME "M" PENNANT and the Victory Eagle flag have just been raised at Marinship yard after presentation from Admiral Vickery just preceding the launching of Andrew D. White.

LAUNCHING OF S. S. MARK HOPKINS

THE SPONSOR of the Mark Hopkins, (top of panel at right) Mrs. R. R. McNulty, wife of Captain McNulty, Supervisor in charge of U. S. Merchant Marine Cadet Corps for WSA, receives a salute from members of the Cadet Corps while being escorted by Lieut. Comdr. Arthur O. Brady, District Instructor of the San Mateo Basic School, at Marinship on January 17. The matron of honor, (center) Mrs. Brady, wife of the Lieut. Comdr., watches the sponsor with two cadets and Miss Sylvia Fischer. The sponsor's party (bottom, left to right) are: Commander Ralph M. Sheaf, commanding officer, San Mateo Basic School; W. E. Waste, Marinship general manager and master of ceremonies; Mrs. Brady; Mrs. McNulty; Lieut. Comdr. Brady; P. L. Shobe, Marinship controller; and Lieut. (j.g.) Jerome J. Sullivan, Navy Chaplain.

ABOVE LEFT: REAR ADMIRAL HOWARD L. VICKERY looks on as Mrs. Nathan W. King, wife of an employee of Jashua Hendy Iron Works, christens Andrew D. White at Marinship, January 28, with Mrs. Melzina Pray, matron of honor and Joshua Hendy employee; and James Quin, Marinship timekeeper.

ABOVE RIGHT: ADMIRAL VICKERY pins merit badge of Mike Van Dusen, Marinship carpenter, at presentation of Marivime "M" burgee and Victory Eagle flag to Marinship. Other employees to receive pins are, left to right: Joseph W. Nelson, control engineer; James Quin, timekeeper; and Gardner Carpenter, welder.



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MARINE INSURANCE MARKET

by Rear Admiral Howard L. Vickery, U.S.N.

Vice Chairman U. S. Maritime Commission To The American Institute of Marine Underwriters

HILE WE CAN hold out to you the promise of a post-war American merchant marine capable of providing a substantial volume of marine insurance business, we can also assure you of our understanding of the difficulties you are encountering today. We of the Maritime Commission and the War Shipping Administration fully realize the disruption of normal vessel operations and related activities which the war has brought about. It has been necessary to requisition the merchant marine as a whole and to divert vessels from their usual trade routes to such employment as the requirements of the moment dictate. Moreover, we are not unmindful that the operation of ships under the most difficult conditions, sometimes without ordinary navigational aids, often without lights, and frequently in convoy, has brought about losses which underwriters could not well anticipate when fixing their insurance rates. In view of these factors, the War Shipping Administration is now exploring means to relieve marine underwriters from certain unusual wartime risks, and it is hoped that current negotiations in this connection will result in a mutually satisfactory so-

You may be sure that the cooperation of marine underwriters under trying circumstances has been of vital assistance to the War Shipping Administration and is truly appreciated. As an outstanding example, I might refer to your splendid response when you were

asked to write, as agents for the Government, war-risk insurance on imports. It is a real credit to your organizations that the insurance on the majority of imports was transferred in an orderly manner from the commercial market to the War Shipping Administration within the space of a few weeks. That this transfer, as well as the assumption of other insurance risks by the W.S.A. was brought about by war-time necessity, I am sure you realize. Disruption of the normal functioning of business in general is among the unavoidable casualties of war. At the same time, however, the facilities of the American marine insurance market are a national asset now, as well as in peacetime, and it is essential that your market be kept intact.

I cannot emphasize too strongly that the prime job for all of us is the winning of the war. But the future security for which we are fighting will depend, at least in part, upon plans which are made today. Sound planning, therefore, must be undertaken along with our efforts to win the war. In many instances, you of the Institute of Marine Underwriters already have suffered heavy losses as a result of the war. But the plans for the reconstruction of your businesses will be of significance not only to you. They will form the pattern for an essential part of the post-war structure which must be designed to preserve the peace our arms will win.

I have long believed that a healthy American merchant ma-

rine requires an equally healthy American marine insurance market. This concept is not unrecognized in the Merchant Marine Acts. When the war is over, our merchant marine will be in a position of world predominance. It will enable this country to transport its proper share of international trade. It will be a fleet, second to none, American built and American operated. Why, then, should it not also be American insured?

It is true that in the years preceding the war, a substantial domestic hull insurance market was established, but I believe that in the future there should be an American marine insurance market capable of fulfilling all the insurance needs of the American merchant marine. There will be many new ships, safe, wellmanned—a fresh start in the shipping world. Then let your plans be based on a fresh start too. Figure on nothing less than making our merchant marine All American!

It is not alone a question of self sufficiency. Neither is there any objection to normal international commercial relationships, for we are fighting, among other things, to insure fair treatment to all, in all of the markets of the world. But, reinsurance, in my opinion, should be a two-way street.

Despite any of your present individual reverses, you can at least look ahead with confidence. The United Nations will win this war. The men in the shipyards and factories, and the men who take our ships to sea, will have played a considerable part in that victory. At the same time, they are establishing a formidable American merchant marine—and a tremendous marine insurance field. The business will be there. It will belong to America. Let's keep it American.

(Extract from a luncheon speech.)





Col. Thomas J. Weed, superintendent of Army Transport Service at the Seattle Port of Embarkation; Thomas J. Bannan, vice president of Webster-Brinkley; Jay Longmire, machinist and Mrs. Marion L. Lambert, machinist's helper, display the signed employee pledges of continuous performance.

Employees Make Pledge at "E" Award to Webster-Brinkley

The inspiring and climactic moment of the Army-Navy "E" award celebration at the Scattle, Wash. marine machinery plant of Webster-Brinkley Company was the pledging of continued "Guadalcanal" performance by employees. Two workers who represented their fellow employees presented a signed pledge directed to Secretary of War Stimson and Secretary of the Navy Knox.

The company's pilot machine shop was the scene of the award ceremony taking place on January 16, at which the assistant commandant of the 13th Naval District, Captain Spencer S. Lewis, made the presentation.

"I've heard that all this company needs is a 'blue print and a date'," Capt. Lewis commented, "I like that phrase—a blue print of an idea and a date for its delivery. It would please my shipmates out in the Pacific if they could hear that phrase...."

George Gunn, Jr., president of Webster-Brinkley, made the speech of acceptance, and Thomas J. Bannan, vice president, responded for the suppliers.

The reception and refreshment service were arranged in the LST assembly plant. The occasion offered opportunity for many guests to see for the first time how this company has applied highly specialized production line technique to the manufacture of intricate marine machinery.

Promotions

Four stripes are now worn by William C. Tooze, denoting his promotion from commander to captain in the United States Navy. He is the only non-naval Academy man in the Twelfth Naval District to hold this rank.

Forty years service is in back of Captain Tooze, who is in charge of Naval Reserve in this district. He is well-known to merchant captains as well as regular Navymen. He served on the old Oregon, the cruisers Frederick and Pueblo, the cruiser Rio de Janerio and the destroyer Wells.

A first lieutenant's commission was won by William R. Strickland, formerly traffic manager of the Seattle office of Sudden & Christenson, Inc., and he has been ordered to Pasco, Wash., with duties as assistant in the transportation and operations offices.

Promotion from major to rank of lieutenant colonel was awarded J. A. Barthrop, assistant superintendent. Seattle Port of Embarkation, Army Transport Service.

After rendering record service and making a host of friends on the Pacific Coast, Bernard J. O'Sullivan, assistant operating manager of the War Shipping Administration on the Pacific Coast, with headquarters in San Francisco, was named assistant marine superintendent of the Gulf WSA district with Mobile headquarters. He was succeeded here by J. W. Harper, who has been located in the local WSA's ship control section.

Masters, mates and pilots will be pleased to learn that Commander M. C. Kent USN, has been placed in charge of the branch Hydrographic Office in S n Francisco. He succeeded E. D. Washburn, Jr.

Commander Kent, until his retirement in April 1941, had been going to sea since he was 14 years of age. He spent ten years in the merchant marine and then joined the Navy, serving thirty years.

J. M. Zimmerman is now staff manager for the Pacific Coast District, manufacturing and repair division of the Westinghouse Electric & Manufacturing Company. He will supervise repair activities, contracts and pricing for the department at the Emeryville headquarters plant and plants in Los Angeles, Seattle, Portland and Salt Lake City.

Coast Guard Reserve

The San Francisco bar pilots, State pilots for the port of San Francisco, are now member's of the Coast Guard reserve without pay from the United States.

Captain Philip E. Roach, district Coast Guard officer, Twelfth Naval District, in making the announcement, said:

"San Francisco bar pilots, State pilots for this port, are now members of the Coast Guard reserve without pay from the United States. This setup is in the interests of port security, the safeguarding of vital war information, and the co-ordination of the existing State pilot system in accordance with wartime requirements.

"Pilotage will continue as before. While actually piloting the vessel, the pilot is still acting as a State pilot rather than as a Coast Guard officer. The State pilot's relationship to the master or the commanding officer, the vessel and the owner remains as established in maritime law. There is no substitution of command by reason of the membership of the pilot in the Coast Guard reserve. Masters and commanding officers are still responsible for the navigation of their vessels and may relieve or supersede the pilot whenever in their judgment it is necessary, as heretofore. The United States is still not responsible for any negligence of the pilot.

"The pilot is still entitled to his

fees as prescribed by the State and these fees will be collected in the usual manner."

Propeller Club Meets

The first meeting of the Propeller Club, Port of Los Angeles-Long Beach in the new year of 1943 was held at the Pacific Coast Club, Long Beach, January 21, 1943.

Edgar M. Wilson, president, announced that the very interesting speakers at the luncheon gathering included Captain A. W. Pearson, Los Angeles Port Captain of the War Shipping Administration and Ralph I. Chandler, Southern California Manager of the Matson Navigation Company and past president of the Propeller Club. Captain Pearson spoke on his experiences at Murmansk and Ralph Chandler told some of the details of his recent air trip down under.

Below: Matson employees are busier than ever these days as these informal pictures from three of their ships indicate.



K. MADISON, 1st Asst. Engineer, at throttle maneuvering main engine of S.S. Weimed, while LOUIS DI LUZIO, Relief Engineer, assists by answering engine room telegraph.



On S.S. Stephen A. Douglas, H. GOODE, Chief Officer; G. JAHN, 2nd O'ficer; Captain E. SYEDSTRUP; R. KINGSBURY, Portland Office, and CHAS. KEANE.



Able Bodied Seamen MARSHALL MARKHAM and ALBERT NORDEE of the S.S. Makua at lunch in messroom of their ship.

"M" Award

One of the wartime poles of Inba Luris, Iba, of Louisville, Kentucky is that of providing fit tings required in the complex piping systems that circulate water, steam and oil alward merchant ships of the ever growing Victory Fleet. For outstanding achievement in the production of flanges and welding fittings, the firm received the "M" award of merit from the U. S. Maritime Commission on December 18.

The "M" pennant and labor merit badges for the workers were presented by Mark O'Dea, Director, Division of Public Relations, U.S. Maritime Commission, at ceremonies held in the Memorial Auditorium at Louisville. Among those participating, in addition to the entire body of workers, were W.H. Girdler, Jr., president, and John G. Seiler, sales manager of Tube-Turns; Governor Keen Johnson of Kentucky, and Mayor Wilson Wyatt of Louisville.

In the past 15 years welding fittings have been developed and manufactured by this firm for use in industrial and shipboard piping. The products of Tube-Turns have been supplied to all Maritime Commission shipyards on a well maintained delivery schedule.

Home and Gifts for Seamen

The beautiful Mills Mansion at Millbrae, San Mateo County, has been granted the United Seamen's Service for a convalescent and rest home for war-wounded merchant seamen. The home was ready for occupancy on February 10th.

Furnishings and equipment for the home were secured from American luxury liners, now troop transports.

The War Shipping Administration announces a leading eigarette manufacturer has agreed to distribute eigarettes free of charge to the crews of all United States Merchant Marine vessels. The eigarette manufacturer is making the donation as a contribution to the war effort. He asked his name be withheld.

Honor Roll

Mats in No. 1, that Company has issued a Roll of Honor of their employees in the aimed tories afloat and ashore. Among the well known names listed in service from the Matson roster are.

Richmond Barker, son of the late Joe Barker, port engineer. who was first assistant on the steamer Makua, now in the Navy: Edward T. Collins, former master of the Jupiter, Navy; John C. Fishbeck, former purser on the Matsonia, later manager of the Royal Hawaiian Hotel, Navy: A. Gordeneva, former Chief Officer on the Mariposa, Army; Ronald Miller, former Chief Engineer on the Hercules, Navy: John J. Janus, Chief Officer, Hercules, Navv; Volmer Holm, Chief Officer, Maunawili, Navy; Clyde M. Parker, son of Captain Clyde Parker, San Francisco Bar Pilot, Third Officer, Kohala, Navy; E. H. Russell, Relief Engineer, Navy; Carlos J. Stettin, Chief Purser, Mariposa, Army; W. H. Turnquist, Master, Hercules, Navy; J. Van der Dussen. Second Assistant, Mauneli, Navy: Robert L. Weber, Chief Officer, Maliko, Navy.

Fred M. Rohrer, vice-president of the Grace Lines in charge of the Gulf territory, arrived in San Francisco on his first visit since he was promoted from his old post as assistant to the President with headquarters formerly in New York.

Rohrer is a former San Franciscan, who started as office boy with the old Pacific Mail. With Golf and Pacific ports assuming national marine leadership, Rohrer was elevated to the post of vice-president by R. Ranney Adams, President, and assigned to New Orleans.

Charles L. Weeler, vice-president and general manager, Mc Cormick Steamship Company, formerly president of the Propeller Club of the United States, Port of San Francisco, has been selected for the 1943-44 presidency of Ro-



HENRY FRIELENGHAUS, former vice president of Todd Hobolica Dry Docks, Inc., is now comptroller of the Todd Shipyards Corporation.

tary International by the organization's nominating committee, which met late last month in Chicago. He is former vice-president of the organization.

Another American-Hawaiian executive has temporarily left the organization for war service. He is Stafford S. Harlow, who has just been commissioned a Major. He has been assistant manager of the American-Hawaiian in Los Angeles for the last decade and has been identified with the concern for the last 21 years.

Women's Annual Meeting

The women's organization for the American Merchant Marine held their seventh annual birthday party meeting January 14, 1943, at the Savoy Plaza hotel in New York City.

Miss Madeleine Carroll, famous motion picture star, was guest of honor for the occasion. Miss Carroll is also the well-known head of the Entertainment Committee of the United Seamen's Service.

Mrs. R. R. Waesche, wife of Rear Admiral Waesche of the U. S. Coast Guard, was another guest of the organization. Merill Johnson, well-known in Pacific Coast marine engineering circles as chief engineer of the old Panama Mail liner, Venezuela, and later port engineer until he went to New York for the Grace Line some 12 years ago, is off duty on a leave of four months because of ill health. He is recuperating on a farm in Massachusetts.

Johnson had been ordered to New Orleans when he was taken sick. Vice president Fred Rohr granted the leave of absence. Rohr is in charge of the Gulf territory for the Grace Line.

New District Manager In Pacific Coast Area

F. F. Elliott has been appointed district manager of the Pacific Coast area of Crane Co., with headquarters at the San Francisco branch, 301 Brannan Street. This district covers the states of California, Oregon, Washington, Arizona, Utah, Nevada, and Idaho, where 19 Crane branches are located.

Mr. Elliott joined the Crane organization as an industrial salesman at the Los Angeles branch in 1922. He moved to San Francisco in 1929, and after serving as sales manager, and assistant manager for a few years, was made manager in 1934.





Edward H. Savage, Seattle realtor and civic leader, who was named Seattle port commissioner from the South District to succeed the late Smith M. Wilson, was elected vice president of the commission on January 12. Shown left to right are: Savage, Col. W. C. Bickford, general manager; John A. Earley, president, and Horace P. Chapman, secretary. The new port commissioner was born in Ireland 56 years ago and has been a resident of Seattle since 1915.

He is a member of the distributors committee of the plumbing and heating division of the War Production Board, and is an industry member of the Advisory Council of the National War Labor Board, Tenth District.

M. J. Burress, former assistant manager at Los Angeles, succeeds Mr. Elliott as manager of the San Francisco branch.

Three "E" Awards to Fairbanks-Morse

Three Army-Navy "Es" were awarded during the past month to the plants of Fairbanks, Morse & Co. at Beloit, Wisconsin, Freeport, Illinois and Three Rivers, Michigan. The equipment built at the three plants of the company is used by the Navy, Army, Coast Guard, Maritime Commission, Air Corps and Treasury Department for Lend-Lease to the United Nations.

The ceremony at the Beloit, Wisconsin plant was attended by the largest crowd of employees and their friends, some 15,000 people being in the audience.

At Beloit the Army-Navy "E" burgee was presented to the company by Admiral E. L. Cochrane, U. S. N., chief of the Bureau of Ships, and it was accepted by A. C. Howard, general manager of the Beloit Works.

Colonel Robert H. Morse, president, responded with a note of

appreciation, saying, "When the forces of envy and hate attacked America, they also attacked this community, this organization, and every man, woman and child present here—they cannot do that to Beloit or to the people of Fairbanks-Morse and get away with it. We are fighting back."

At the Freeport ceremonies, the presentation of the Army-Navy "E" award was made by Lt. Commander Grismer, U. S. N. R. Colonel J. F. Butler presented the employees pins to two of the oldest employees, and the acceptance of the burgee was made by Lee Madden, general manager of the Freeport Works, while the remarks of appreciation were made by A. E. Ashcraft, vice president of the company in charge of manufacturing.

The Three Rivers ceremony was similar, with Captain Robert Henderson, U.S. N., from the office of the Secretary of the Navy, presenting the flag which was received on behalf of the company and its employees by Karl E. Barrett, general manager of the Three Rivers Works. Major Kenneth H. Knowlton presented the "E" pins to four of the old-timers at the plant, while Robert H. Morse, Jr., representing his father, president of the Corporation, acknowledged the receipt of the award with appropriate remarks.

PACIFIC MARINE REVIEW



T. B. Forster, manager of San Pedro, Rear Admiral I. C. Johnson, U. S. Navy Ret., Col. W. A. Aird and A. S. Gunn, general manager, Pacific Coast yards, display the "E" pennant recenty awarded this division of the Bethlehem Steel Co.

San Pedro Award

The Army-Navy "E" the symbol of our fighting forces' joint recognition of exceptional performance on the production front was awarded the San Pedro Shipyard of Bethlehem Steel Company at Terminal Island, California, on Tuesday, January 26.

The program featuring the presentation was a colorful ceremony. After the introductory remarks by Master of Ceremonies A. S. Gunn, general manager, Pacific Coast Yards, an address was given by Honorable Fletcher Bowron, Mayor of Los Angeles. Rear Admiral I. C. Johnson, U. S. Navy (Ret.), Director of Naval Officer Procurement in the Eleventh Naval District, made the actual presentation address and T. B. Forster, manager of the San Pedro yard, accepted for the management.

Forster promised continued good work when he said, "This nation faces a long, tough and bitter fight. Our responsibilities in it are heavy. Hard work lies ahead of us. From what we have done in winning this "E" award I know that we can do more and better in the future. I know you will back me up, in promise and in performance, when I say to the Navy and Army, we'll build and repair your ships!"

Col. W. A. Aird, Port Commander, Los Angeles Port of Embarkation, presented the employee award pins to three employees with the longest service records.

Cooper-Bessemer Awarded Maritime "E"

In a stirring ceremony in Grove City, Pa., Friday, Dec. 18, Rear Admiral Howard L. Vickery presented the Maritime "M," highest award of the United States Maritime Commission, to workers and management of both the Grove City, Pa. and Mount Vernon, Ohio plants of The Cooper-Bessemer Corporation.

This honor was awarded Cooper-Bessemer in recognition of their outstanding achievement in producing diesel engines, steam cylinder castings and other vital engine parts for cargo vessels and Liberty ships of the United Nations' fleets.

Admiral Vickery, in his presentation address before a huge throng assembled in the main machine shop of the corporation's Grove City works, keynoted the occasion when he said, "Although you of The Cooper-Bessemer organization have been called upon to step up production to nearly six times the original figure, you have not only met delivery schedules, but have actually exceeded them. Your record in production has been accomplished through the typical American qualities of

Right: President A. G. Pratt accepts the Army-Navy Production award at the Augusta, Georgia, works of the Babcock & Wilcox Refractories Division.

inventiveness, resourcefulness and determination. That is the kind of spirit that is going to win this war."

In accepting the award on behalf of his fellow workers, Gordon Lefelovre, vice-president and general manager of the corporation, was given a tremendous ovation when he revealed some of the remarkable output figures attained by both plants during the past year.

Admiral Vickery presented the Maritime Labor Award badges to veteran workers, Ed Thompson, representing employees of the Mount Vernon plant, and Clarence Crowell, representing the Grove City group. The signifi-

Below: Admiral H. L. Vickery presents the Maritime "M" burgee to Gordon Lefebvre, vice-president and general manager of the Cooper-Bessemer Corp., during ceremonies at the company's Grove City, Pa. plant.





cance of the Labor Merit Insignia and what it meant to each employee was ably phrased by John Blair, member of Cooper-Bessemer's Labor-Management Committee, in his address of acceptance.

The event, attended by many high ranking naval officers and business leaders, was the first celebration ever held in which the two widely separated plants of the corporation participated at the same time. The entire ceremony was carried to workers at the Cooper-Bessemer headquarters in Mount Vernon, Ohio, where employees had assembled to hear details over directly wired amplifiers from Grove City.

All who witnessed the ceremony and heard the inspiring addresses were impressed with the significance of the occasion which marked a high point in Cooper-Bessemer's 110-year history.



FRANK DE PUE

Mariner's Club Elects Officers

At the annual election and business meeting of the Mariner's Club of California, held February 3, Frank H. DePue, sales manager for the Moore Dry Dock Company, was elected president for the coming year. Thomas A. Short, the irman of the nominating committee, reports the selection was unanimous. As his aides, Mr. DePue will have James Pringle for vice president and E. V. Winter, Capt. A. T. Hunter, Frank Fox and H. P. Steward on the Board



P. D. McELFISH

Kilsby and Graham Announce

P. D. McElfish, for the past eight years Supervisor of Materials and Inspection at Los Angeles for The Standard Oil Company of California, has been appointed metallurgical and engineering representative for Kilsby and Graham, Los Angeles; who are Pacific Coast representatives for the products of The Babcock & Wilcox Tube Company, William F. Klemp Company, Sivyer Steel Casting Company, and Shenango-Penn Mold Company.

Mr. McElfish is well qualified to assist Pacific Coast industry on technical problems involving welding and metallurgy, since he has had considerable Eastern steel mill experience, together with being an active member of The American Society for Metals and The American Welding Society, of which he is vice president of the Pacific Coast District. He has also served upon a number of technical committees of The American Petroleum Institute.

Pacific Coast Aggregates, Inc. Becomes Pacific Coast Representative

Probably one of the most important deals to take place recently has been consummated between J. A. Zurn Manufacturing Company and the Pacific Coast Aggre-

gates, Inc., whereby the latter will become direct factory representatives for the J. A. Zurn Company, who are important factors in all kinds of marine product specialties such as:

Port Lights, Bulkhead Flanges, Scupper Valves, Deck Plates, Operating Gear Access Boxes, Marine Suction Line Strainers, Sounding Plugs, Adjustable Head Deck Drains, Deck Sleeves, Strainers for water, oil, all fluids, Deck Drains for Navy & AMSC specifications, P & S Traps for drainage system, Combination Backwater Check Valve Traps.

Pacific Coast Aggregates, Inc., are exclusive distributors for Fiberglas, and this department is already closely identified with the great shipbuilding program. With the advent of their taking on the Zurn line, a new department is created and representatives will later be stationed in Los Angeles, Portland, and Seattle. Before this arrangement was consummated, A. K. Humphries, president of the Pacific Coast Aggregates, Inc., personally visited the Zurn plants and made arrangements to allocate a fair percentage of their complete production facilities for the exclusive use of the Pacific Coast shipbuilding plants. The matter of service and delivery is so important that it should be a source of much satisfaction to the shipbuilding factories on the Coast to find facilities not heretofore placed at their disposal now offered with such complete coopera-

Alan P. Cline, who has a large acquaintance on the Coast, will be in charge of the Zurn Department of the Pacific Coast Aggregates, Inc.

New Appointment

The United States Maritime Commission has recently appointed Robert A. Wirfel as Principal Purchasing Officer in the Procurement Division on the Pacific Coast. He is located in the Financial Center Building at Oakland and will devote his time to locating facilities for the Maritime Commission up and down the West Coast.

Army-Navy Star Award

Admiral II. A Wiley recently partitled the Carteret Works of I ester Wheeler Corporation that it had won a Star for excellence in the production of naval equipment at the end of six months following the original All-Navy "E" award. The snappy, impressive, "out to win" presentation ceremony was held January 14 in one of the new construction shops at the noon hour.

In addition to receiving the Army-Navy "E" pennant "with Star" from the U. S. Navy, there was the award of a Minute Man flag by the United States Treasury Department in recognition of exceeding the goal set for purchase of war bonds by the men and women of Carteret.

Senator John E. Toolan of New Jersey acted as Master of Ceremonies after being introduced by William Lonsdale, vice president in charge of manufacturing at Foster Wheeler. Captain B. H. Bruce, U. S. N., presented the "Star" pennant to President H. S. Brown and after appropriate acceptance the burgee was raised on the speakers' platform. Token "E" insignia were next awarded to Mrs. Catherine Kimback and Joseph McClure as representatives of shop personnel by Lieutenant Commander William S. Downs.

Following this, Lieutenant J. Douglas Gassford, U. S. N. R., introduced Chief Gunners Mate George T. Lambert, whose first ship was torpedoed from under him off Cape Hatteras in March. 1942, and who was later on a ship in the Mediterranean sunk by

were dramatic and grim. John V. Ramsay, chairman of the Industrial War Bond Drive, then presented the Minute Man flag to Robert Townsend, president of the shot complexities.



CAPT. O. A. PIERSON

Captain Orel A. Pierson, 43 year old skipper of the American President Lines' President Harrison and eight members of his crew are prisoners of war in a Shanghai Japanese prison camp. News of the plight of the popular Trans Pacific skipper and his men was received through Red Cross channels.

Mrs. Pierson, who lives at the family home, 2000 Wawona street, San Francisco, said she last heard from her husband on December 4, 1941, three days before the assault on Pearl Harbor.

Others of the President Harrison's crew being beld are Chief

of neer bolic H. Thuesen, 32 years of neer; Sidney Oscar Olsen, 28, third officer, who is the son of Captain Lats P. Olsen of Oak Lind, John W. Griffin, Flind Assistant Engineer, who resided with his wife and daughter in O. Land. Other crew members meladed Purser's Clerk Thomas I. Sullivan, Charles Edward Wharton, Jasper D. Treadway, Charles Gonzales Sanders and Loo Elsworth Madden, ship's radio operator.

The Office of War Information gave no other information as to other licensed officers or crew or the President Harrison's fate.

New Steamship Agency

Leslie H. Cloud, formerly manger of the Girdward Shipping Company, has recently opened The Western Steamship Agencies at 200 California Street, San Francisco, His many friends will find him at Suite 706 in the Newhall Building.

Firm Change

O. C. Hansen, who has been manager of Frazar & Co., for a quarter of a century, is now a member of the firm and the name has been changed to Frazar & Hansen, Everett Welles Frazar announced.

The firm recently acquired their own building at Front and Clay Streets in San Francisco. It is one of the oldest concerns of its kind in the United States, having engaged in foreign commerce since the days of the New England Clingers in 1884.

FOR SALE CHEAP

One Dake Steam Steering Engine

Sears Dock & Dredging Company
West Bay Road
Traverse City, Michigan





PLYMOUTH CORDAGE COMPANY
NORTH PLYMOUTH, MASSACHUSETTS

KEEP POSTED

(Continued from page 79)

will remain inflated though pierced by a shark or other object from the bottom.

A sail is provided as well as a tarpaulin with which the crew can protect itself from the elements.

Besides the sail and wooden oars on which the sail may be rigged, equipment includes a fishing kit, emergency repair and signal kits, and first-aid equipment. These items, together with concentrated rations for 30 days, and in some boats a radio sending set, supplied by the Army Air Corps, will be placed in a special waterproof container secured to the floor of the boat. Thus they cannot be lost when launching the boat or in case it is overturned.

Other essential equipment, such as the sea anchor, bailing bucket, and plastic hand pump will be tied individually by cord lines to the raft.

Dimensions are approximately 12 feet long and 5 feet 8 inches wide, and weight, complete with equipment, is only 70 pounds. The boat, deflated with equipment, rolls into a carrying case 3 feet long by 1½ feet in diameter. Like all Army boats for rescue at sea, the top is orange-yellow for quick visibility and the bottom is blue to avoid attracting sharks.

Modish Styles In Safety Hats

A new series of safety hats, created especially for women in industry, has just been announced by B. F. McDonald Co., of Los Angeles and San Francisco, manufacturers and distributors of safety equipment. That the new hats are smartly designed is apparent even to a "mere man," to whom the average woman's hat has always been an inexplicable puzzle. Women workers are said to go into raptures over these latest creations of one of the foremost designers of women's headwear, the moted Lilly Daché, whose label apparents it all models.

Commissioned to design these hats for the McDonald Co., Miss Daché and her corps of stylists chose plastic mesh and transparent plastics as their basic material, both for its practicability and availability. Even the tricky little ornaments used on some of the designs are made of non-critical materials.

Four designs were selected to round out this new line of women's safety hats. One is a dashing cap with broad visor, made of plastic mesh with a contrasting color band, and set off with a military pin. Another is a smart turban, also of plastic mesh, bound in a contrasting color and ornamented by a military pin. A third design has a one-piece crown and visor, made of transparent plastic, and close-fitting. It has a detachable snood. The fourth design is similar to the third, except that the crown is slit for adjustment.

All models are ventilated to make them cool and comfortable, even when worn constantly. No sizes are required since each model is adjustable to fit any head. Enthusiastic reports are said to have come from plants where they have been tested, since these new



SAFETY HAT for women created for B. F. McDonald Co. by Lilly Daché, well-known designer of feminine headwear.

Daché hats not only meet with the enthusiastic approval of women workers, but also effectively protect the worker from the danger of loose or flying hair becoming caught in moving machinery.

New Firm of Marine Consultants

To relieve the terrific pressure in the engineering departments of many shipyards and to furnish competent advice and adequate design service to smaller yards having no engineering department, a group of engineers or-



THE OFFICIALS of Engineering Design, Inc., left to right: E. B. Capion, hull engineer; Thomas T. Lunde, mechanical engineer; R. L. Miller, Jr., hull and engineering; and W. W. Steiner, electrical engineer.

In Northern California

OWENS-CORNING

FIBERGLAS

NAVAL & MARINE INSULATIONS, CLOTHS, TAPES

are marketed by

PACIFIC COAST AGGREGATES, INC.

The Complete Building Material Service

85 Second Street
SAN FRANCISCO

Yards in

BERKELEY OAKLAND SAN FRANCISCO DALY CITY



One formula for all uses—corrects imperfections in threads—smooths flange faces—expands and contracts with pipe movement — withstands pressure—holds anything carried in metal pipe except some heavy acids—economical, goes four to six times further than ordinary compounds—ends leaks permanently in all types of lines.

Distributors Everywhere • Ask Your Local Mill Supply House

X-PANDO CORPORATION
43-15 36th Street, Long Island City, New York



ganized a corporation and opened offices at 121-2nd Street, San Francisco.

This firm, under the name of Engineering Design, Inc., has been and is prepared to furnish working plans with advance material lists for any job, large or small. The staff are fully cognizant of the necessity of speedy performance. They have undertaken several conversions and have been able to meet all schedules and deliveries on time.

The organization was formed and is being operated by the following men, all of whom have previously been engaged in either naval architecture or engineering work in the San Francisco Bay region:

Thomas T. Lunde, mechanical engineer.

R. L. Miller, Jr., hull and engineering.

E. B. Capion, hull engineer.

W. W. Steiner, electrical engineer.

With capable draftsmen assisting and with Frank C. Ott as consulting naval architect, this organization has adopted as its slogan "Meet or Beat the Deadline on any job, large or small."

The firm reports a healthy growth in business and is ready to undertake any assignment in basic design or conversion of marine structures.

Hand Lift Truck

With today's pressing, evermounting production schedules and plant expansions, it is increasingly evident that new, more efficient methods of mass movements of materials are a vital requirement of industry.

As one remedy for this urgent need, The Yale & Towne Manufacturing Company, Philadelphia Division, designed and developed the new Yale Load King trailer type hand lift truck.

Fitted with safety self - coupler attachments front and rear, the Load King is the ideal load carrying unit for trailer train operations —a method by which materials can be quickly dispatched over greater plant areas in the shortest possible time.

When not operating as a trailer, the truck functions as a conventional type hand lift truck. It embodies in its construction all those features for which Yale hand lift trucks are famous.

It is claimed that the Load King brings many advantages to materials handling operations. First, it reduces by over 50 per cent expenses incurred when buying conventional trailer type equipment. Furthermore, this unit fits in with present equipment; it*utilizes present skid platforms and pallets because it is adaptable to the handling of all types of loads on skids,

bins, dump body skids, as well as all special type skids.

Another economy of the Load King is that inexpensive skid platforms or special platforms are available to handle all types of loads whereas conventional type trailers are not always obtainable. Present tractor, electric-lift truck or fork truck supplies the motive power when this equipment is used in trailer service.

The Load King trailer system does not tie up costly floor truck trailers when temporary storage is required, and the system eliminates rehandling of materials when temporary storage is necessary. Empty skids require a minimum of floor space when not in use, giving industry the most efficient and economical method for the mass movement of materials yet devised.

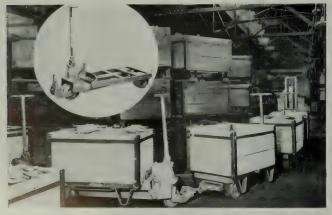
New Transatlantic Radio-Telegraph Circuit

A new radio-telegraph service between the United States and Great Britain was established Feb. 1, operated by the Mackay Radio and Telegraph Company here, and Cable & Wireless, Ltd., of the British communication system. The new direct transatlantic circuit will be an important aid at this time in handling the large and steadily mounting volume of rapid communication messages between this country and our British allies.

The opening of the service was announced by Admiral Luke McNamee, president of Mackay Radio, and the first messages were exchanged between the admiral in New York and Sir Edward Wilshaw, managing director of Cable & Wircless in London.

The announcement states that all classes of commercial telegraph service will be handled over the new circuit, including Expeditionary Force Messages, the special low-rate radiogram service to men in the armed forces of the United States stationed overseas.

The new circuit is the latest addition to the expanding network of foreign connections established



YALE HAND LIFT LOAD KING TRAILER TYPE TRUCK

by Mackay Radio since the start of the war, which includes Russia, Australia. New Zealand, Egypt, Bermuda, and various points in South America

Manufacturer Helps In Housing Shortage

"What can we do to help the war effort out here in the West?" executives of W. P. Fuller & Co. asked themselves in December. On February 1 their own answer went up on billboards in California, Oregon, Washington, Arizona and Utah.

A special war message, written and printed by Fuller, is being read today in almost every war production center in the far West. In billboard form it carries four straightforward lines of type with colors and design reduced to the utmost simplicity to emphasize the importance of these words:

Put a roof over a Warworker's family!

RENT YOUR SPARE SPACE NOW FOR CASH! REMODELING MATE-

RIALS AVAILABLE!

Call WAR HOUSING CENTER SU. 6867 Immediately.

(Phone number changes by

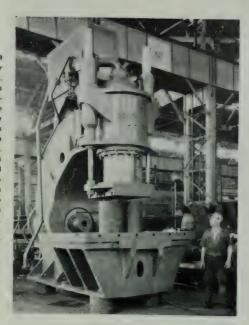
(Phone number changes by cities.)

Thousands of dollars are buying billboard space for this message in cities where housing conditions are hurting war production, from Oakland to Ogden, from San Diego to Seattle. In these areas the National Housing Agency has established War Housing Centers to handle leasing, conversion, priorities, etc. Fuller has made its tie-in especially effective by featuring the local Housing Center's telephone number, and urging people to "call immediately."

Fuller has worked closely with the National Housing Agency to insure complete coordination with local War Housing Centers. In town "A," for example, the Housing Center was not officially set up until after Fuller's posters had gone to press. Advised of this in advance, Fuller ordered extra paper printed and held for instructions. As this article is being writ-

SWAN ISLAND PRESS

Recently installed at Kaiser Co., Inc. tanker yard on Swan Island. Portland, Oregon, is this new 400-ton Southwork hydraulic gan press, manufactured by the Baldwin Southwark Division of The Baldwin Locomotive Works. Philadelphia, which is being used to form keel plates and other cargo ship sections. Having a 66-inch diameter gap and 150-ton, 30-inch stroke horizontal ram. this press is entirely self-contained. Other features are a 26-inch diameter vertical ram with a stroke of 30 inches, pullback cylinders, and a working pressure of 1500 lbs.



ten the lease is under negotiation for Housing Center headquarters in town "A." Shortly, a telephone number will be assigned; Fuller will rush printing of that number for "sniping" on the completed design; and posters will appear in town "A" just in time to coincide with the local center's initial publicity campaign.

Likewise, in towns "B" and "C." There, the decision to set up War Housing Centers is awaiting official action in Washington. Answers are expected momentarily; and Fuller is ready—with poster paper held at the printer's until the word comes through and phone numbers are supplied. Then, as fast as presses and trains can go, the posters will be "up" in "B" and "C."

Thus, one Western industry contributes what it can to help in the battle of production.

Marine Expansion Mackay Radio

The Marine Division of Mackay Radio and Telegraph Company is keeping pace with the greatly increased wartime demands for ship radio equipment and for the rapid repair and maintenance service, which war conditions require at all principal American ports, by expanding its sales and service stations at various ports. This is announced by Admiral Luke McNamee, president of Mackay Radio.

V general program of expansion was started some time before the war when the present Mackay Radio Marine Division was organized under Mr. Walter V. Russ, manager, with headquarters, sales, servicing and warehousing facilities centered in the Port Authority Building at 111 Eighth Avenue, New York City.

Some indication of the rapid growth of Mackay Radio's marine business is evident in the fact that the company has opened its own sales and service stations at eight additional ports in the past four years and has expanded its facilities at other coastal cities.

Mr. Russ recently supervised the establishing for Mackay Radio of a marine sales and servicing center at 350 Mission Street, San Francisco, which is similar in every respect to its marine head-quarters on the East Coast at

New York. It includes division offices, warehouse, shipping facilities and a complete marine shop.

At Portland, Oregon, Mackay Radio has just established the first and only complete marine service station in that busy port since the other war. This is at 214 S. W. Stark Street in the heart of the shipping district.

Mackay Radio is now well

equipped to meet the needs of wartime shipping for vital radio equipment and maintenance servdelphia, Baltimore, Norfolk, Jacksonville, Miami, Tampa, Mobile. New Orleans, Beaumont, Galveston, Seattle, Portland, Oregon: San Francisco, Los Angeles, San Juan, Puerto Rico, and Honolulu, Hawaii.

ice at: Boston, New York, Phila-

ON THE WAYS

(Continued from page 82)

D. White, tenth Liberty ship to be built at the new yard.

Paying warm tribute to Marinship workers, Admiral Vickery emphasized that the yard had contributed more during the past year in ship production than any other six-way yard started during the spring of 1942. K. K. Bechtel, president of Marinship Corporation, accepted the awards "on behalf of the 17,500 men and women who have made Marinship's progress." The flags were raised by four men selected from the yard's production, engineering, facilities. and administrative departments, after which Admiral Vickery pinned merit badges on the men. They were Gardner Carpenter, welder; Joseph W. Nelson, control engineer; W. E. Bachus, carpenter, and James Quinn, time-

Named for the founder of Cornell University, the S.S. Andrew D. White honored the men and women of the Joshua Hendy Iron Works at Sunnyvale, builders of the 271,000-lb. reciprocating engines which power Liberty ships. Charles E. Moore, president of the war plant, was the principal speaker at the launching ceremonies.

The ship's sponsor was Mrs. Nathan W. King, wife of a Hendy employee, and the matron of honor was Mrs. Melzina Pray, employed at the engine works. They had been selected by means of a drawing held by employees of the Jestona Hendy plant,

Another feature of the day at Marinship was the delivery of the S.S. Philip Kearny, recently sponsored by Mrs. Earl Warren, wife of Governor Warren.

\$210,000,000 for Drydocks

The House of Representatives on February 2 approved an appropriation of \$210,000,000 for construction of a world-wide network of floating drydocks for the U.S. Navy. Because of the urgency of this work, tentative contracts had already been let after receiving approval from the President.

Calship Deliveries on Schedule

With a new and larger monthly production quota for 1943, California Shipbuilding Corporation, Wilmington, California, according to their reports, ended the first month with a perfect score - 15 Liberty cargo vessels delivered and 15 launched during January.

Much interest was focused on the fifteenth launching, January 31, which celebrated President Roosevelt's birthday. The sponsor for this ship, the S. S. Robert Stuart, was a little crippled girl. 15-year-old Barbara Jebe, whose father, William, is the business manager of the Pattern Makers Association, A. F. L.

United Launches Tug

Scheduled to play an important part in the non-combat part of the Navy's activities, the U.S.S. Munsee, a fleet tug, was launched on January 21 at the United Engineering Company yards in Alameda, California. This vessel is an ocean-going, deep-sea craft, capable of towing the largest types of combat ships.

Sponsor was Mrs. Lloyd Davis, wife of Lieutenant Lloyd Davis. assistant to the Supervisor of Shipbuilding for the Navy in San Francisco.

Federal Launches Two

The launching of the U.S.S. Appalachian on January 29 added another 10,000-ton naval auxiliary craft to the series being speeded to the United States Navy through the conversion of C-2 cargo ships to wartime purposes in the shipyard of the Federal Shipbuilding and Dry Dock Company. The vessel was sponsored by Mrs. John Frank McInnis, wife of the East Coast Regional Director of Construction of the Maritime Commission, stationed in Philadelphia,

The destroyer Dashiell was launched on February 6, sponsored by Mrs. Robert Brooke Dashiell in honor of her late husband, who was an Assistant Naval Constructor.

Consolidated Launches Two C-1s

The Consolidated Steel Corporation at Wilmington, California, recently launched two C-1-B type cargo vessels for the U.S. Maritime Commission. The first, S.S. Cape Cleare, was launched on January 6 and was sponsored by Mrs. James R. Page. The other was launched 28 days later on February 3, and was sponsored by Mrs. Eleanor C. Parkin.

Ice-Breaking Cutters For Coast Guard

The first of four large icebreakers, now being built for the Coast Guard by the Western Pipe and Steel Co., of Los Angeles, Calif., in accordance with the terms of a contract negotiated in December, 1941, was launched at that company's yard at Los Angeles on December 28, 1942. The new vessel, which has been named the Northwind, was sponsored by

Mrs. Rutherford B. Lank, Jr., wife of Commander R. B. Lank, Jr., chief of the Construction and Repair Section of the Matériel Division at Coast Guard Headquarters.

The second vessel of this fleet, the Eastwind, was launched at the same yard in January, and Mrs Edward II. Thicle, wife of Commander E. H. Thiele, U. S. C. G., christened this cutter. Command or Thiele has been closely associated with the design of the Coast Guard ice-breaking ships. The Eastwind will be followed in the near future by the remaining two icebreakers, the Southwind and Westwind.

Each of the new icebreakers will have a length overall of 269 feet, a beam of 63 feet 6 inches, a draft of 25 feet 9 inches, and a displacement of 5300 tons. On each ship diesel-electric drive developing a total of 10,000 horsepower will turn three propellers, one forward and two aft.

The vessels have been constructed to proceed through field ice as well as pack ice. Seaworthiness of the vessels has been considered of secondary importance as compared with ice worthiness. However, the vessels will be capable of good performance in open water in accordance with normal standards for this type of ship. Their cruising radius at full power in open water will be about 11,000 miles.

Moore Names Two for Clippers

On January 22, the Moore Dry Dock Company, Oakland, California, put two cargo vessels into the waters of the Oakland Estuary. Both were named in honor of clipper ships that sailed in the early 1850s, the S.S. John Land and the S.S. Mary Whitridge.

Tug Contract

The American Machinery Corp., Orlando, Fla., has been selected by the War Department to build four diesel-operated steel tugs, 150 gross tons in weight, and 69 feet long with a beam of 20 feet.



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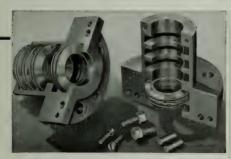
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Vice Pres. & Gen. Mgr.: E. R. Allen.
Treasurer: R. M. Dorsch.
Naval Arch.: Thomas D. Bowes, M. E.
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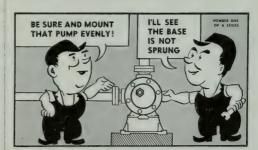


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Koroseal Handbook of Technical Information. Koroseal, a plasticized polyvinyl chloride, described as a synthetic elastic with many rubber-like qualities, has been made and sold for several years. A vast amount of data on the material and its applications have been established.

To place this information in the hands of consumers and others who use or study this synthetic, The B. F. Goodrich Company, which developed Koroseal, will publish a Handbook of Technical Information on the subject, and has already issued Section I, a 24page volume now available upon request. Section I treats the general subject; Section II will cover Koroseal insulating and jacketing materials for the wire and cable industry; while Section III will describe in detail laboratory tests evaluating thermoplastic and thermosetting materials.

Plentifully illustrated, the first

section of the handbook tells the nature and chemistry of Koroseal, physical properties, plasticizers, stabilizers and pigments used in compounds, together with mixing and processing procedures.

Of especial value are six charts, a manufacturing flow diagram, specific viscosity vs. physical properties, effect of quantity of plasticizer, electrical effects of aging, differences in plasticizers and physical effects of various pigments, as well as two tables, one on physical constants and the other on plasticizer comparison.

Magnolia Bearing Metals, a new bulletin on bearing metals, which is particularly timely and helpful in view of wartime restrictions on tin-base babbitts, just published by Magnolia Metal Company.

This bulletin describes various lead-base metals which have been found exceptionally long-wearing on shock loads, on heavy sustained pressures, and on general service; and have proved to be excellent substitutes for tin-base bearing metals.

Two useful features of the bulletin are a number of practical suggestions for best results in making and maintaining journal bearings, and a table of recommendations for selecting the correct type of bearing metal for 135 different types of machinery. In addition, the bulletin also describes Isotropic bronze bushings, die-cast by the crystal control method, which produces a more homogeneous and stronger structure than that of ordinary bronze bearing stock. Copies of this informative bulletin can be obtained by addressing Magnolia Metal Company, 18 West Jersey Street, Elizabeth, New Jersey.

"Red Devil," an attractive and practical buying guide, is the new

Red Devil

72-page catalog, illustrating and describing the "Red Devil" glass cutters', glaziers' and painters' tools and ma-

chines manufactured by Landon P. Smith, Inc., Irvington, New Jersey.

This book is filled with pertinent suggestions that mean time and money saved for professional and amateur glaziers and painters, including a page on "How to Cut Glass," and a concise paragraph on cutter wheels of great value when selecting glass cutters.

Naval Architect: A. M. Deering. Chief Engineer: Charles H. Morse, Jr. Purchasing Agent: J. D. Zwemer.

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DOuglas

BOOK REVIEW

The Boatman's Manual, by Carl D. Lane; 600 pages, 5" x 7"; numerous illustrations; bound in blue buckram with gold stampings; published by W. W. Norton & Company, New York. Price \$3.50 net.

This is a complete manual for the boat operator. The subject is treated in six parts as follows:

Part I. Boat handling, with a chapter on each of the propulsion methods - "Boats under Oars," "Boats under Sail," "Boats under Power."

Part II. Boat Operation has five chapters, i.e. "Government Regulations," "Rule of the Road,"
"Ground Tackle," "Bridge and Quarter-deck," and "Signals, and Signaling.'

Part III. Piloting and Navigation, with three chapters on the "Instruments of Piloting," "Aids to Navigation," and "Navigation,"

Part IV. Boat Maintenance includes four chapters with the following heads: "Marlin Spike Seamanship," "Blocks and Tackles," "Deck Seamanship," and "Boat and Engine Maintenance Re-

Part V. Safety includes two chapters - "Safety at Sea" and "First Aid Sanitation."

Part VI. One chapter on "Custom and Etiquette."

This book contains a remarkthle amount of information on subjects and is carefully and adequately indexed for quick refshould be on the book and arry power cruiser and in the calle operate boats.

NECROLOGY

Shipbuilder Passes

Stanley A. Griffiths, vice president and treasurer of the Winslow Marine Railway & Shipbuilding Company and widely-known shipping man, died January 13 from a heart attack while at luncheon. He had been attending a conference of officers of his own organization and of the General Petroleum Corporation. Born in Monmouthshire. England, February 19, 1884, Mr. Griffiths came to the United States with his parents the following year. He was graduated from the University of Washington in 1906 and Harvard Law School in 1909.

After graduation, he engaged in shipping enterprises for some time as a member of the firm of James Griffiths & Sons, founded by his father, Capt. James Griffiths. For several years, he was resident consul for Siam, and in 1938 dean of the consular corps of Seattle.

Mr. Griffiths is survived by his widow, the former Elsa Churchill, whom he married in 1910; Captain Griffiths, his father; a daughter, Mrs. Frank H. Molitor; and two sons, James F. and Churchill Griffiths, all of Seattle.

Sales Engineer

S. P. "Si" Larsen, Southern California district sales engineer for Hubbard and Company for the past nine years, was killed instantly January 2, in an automobile accident near Riverside, California. Born in Neenah, Wisconsin, in 1899, he began his career in the



STANLEY A. GRIFFITHS

electrical industry with the Wisconsin Light Heat & Power Company at Appleton. Later, he became manager of Line Material Company in the southern states.

Transferred to the Pacific Northwest, Mr. Larsen represented Line Matérial in Oregon, Washington, Idaho, Montana and British Columbia. In 1931, he joined the Hubbard organization as Northwest District Sales Manager, covering the same territory.

In 1933, he was transferred to

Los Angeles.

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Spot-Conditioning

SPEEDS WAR PRODUCTION

by L. W. Clifford
Supervisor, Sales Development Section,
Westinghouse Electric and
Manufacturing Company

ITH THE TIGHTening of critical materials, many new plants are, of necessity, airconditioning only vital areas instead of the entire plant. For example, an airplane plant recently erected a duplicate factory, except for the 6000-hp air conditioning plant. Instead, the plant uses several small scattered air conditioning units for essential production spots.

"Spot" air conditioning is increasingly used for such things as special manufacturing processes, laboratories, testing rooms, and store rooms for instruments and perishable supplies. Often individual self-contained units are applied up to 25 tons. For higher capacities, a central system may

be required.

Spot-conditioning of special manufacturing areas is essential to much war production. A typical case is in holding constant temperature and humidity while cutting marine propulsion gears. At one plant, each of the precision hobbing machines is in separate, insulated rooms and air-conditioned by 25 units, ranging from 2½ to 5 tons.

Holding constant temperature throughout the continuous 17-day gear-cutting period maintains the close tolerances. Similarly, low relative humidity prevents con-

densation on the gear and tools. From two to four men work in each room, and outside air is introduced, mixed with room air, and brought through the air-handling unit to provide a proper working atmosphere. The internal design conditions are 75° F. dry bulb, held within + 1° F., and the relative humidity is held at approximately 60 per cent.

The rooms vary in size, the largest being $38' \times 32' \times 18'$ high, and are of double steel construction with insulation between the walls. Each air-conditioning unit has a heating and cooling coil; 13 evaporative condensers are used for condensing purposes.

This is but one of many indus-

"title" is his given name, the fact that he is a native of Doerun, Georgia, probably having a bearing on his unusual cognomen.

If you visit the plate shop at Marinship you may meet Miss Weld, who is a welder on the day shift. She is Honore Weld and it is just a coincidence that she decided to live up to her name.

The Marinship yard also boasted a shipwright by the name of Boatright, but the Army obtained prorities and Ray Boatright is now in uniform.

Protective Guard For Punch Press

A punch press guard, with flexible glass panels which give complete protection to the worker and has no moving parts to confuse his vision, has recently been designed by Henry Feldman of the Westinghouse Electric and Man-

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trial processes where "spot" air conditioning serves war production. It is flexible, easy to install and adaptable to practically any process where a control of temperature and relative humidity are required.

What's In a Name?

There is at least one general who is not with the Army. He is General Lee Smith, a burner on the swing shift at the Marinship yard in Sausalito, California. The

FROM SHIPYARD TO WAAC... Miss Adele Josephs, a shipfitter's helper at the Todd Erie Basin Dry Docks, Brooklyn, and probably first woman shipyard worker to join the WAACS, is being bid goodby by Mrs. Frances A. Moore, Todd field representative.

ufacturing Company, Baltimore, Maryland.

The guard is mounted on a pinbolted to the left side of the press frame. It may be lifted or lowered on this pin and held in any desired position by means of a thumb screw. The guard is adjusted so that material fed into the die just clears the bottom of the frame. The ram of the press and the movable parts of the die are guarded at front and both sides. There is not enough room between the bottom of the guard and the lower portion of the die to allow the operator's hand to be inserted. This method of protection has been used for some time, and to date its record is perfect.



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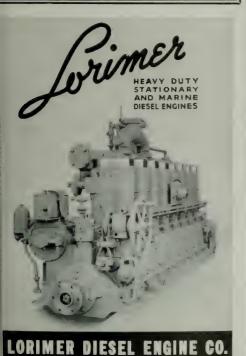


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Fig. 4828 is for pressures to 600 lb, has outside screw and yoke, bolted bonnet and gland and flanged ends. Same design characteristics available in angle valves, and for pressures to 1500 lb.

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AS WE GO TO PRESS

PROPELLER CLUB NEWS

"American-Hawaiian Day" was celebrated by the Propeller Club of San Francisco at the January 21 meeting, Palace Hotel. Major General William P. Upshur, Commandant, Department of the Pacific, United States Marine Corps, was the Club's honored guest and principal speaker. His talk was timely and informative, and was titled "Some Military Characteristics of the Japanese."

Newly appointed house committee for the 1943 functions of the Propeller Club—Port of San Francisco, has been named with this personnel:

Byron O. Pickard, General Chairman; Clyde F. Williamson, Associate General Chairman; Eugene F. Hoffman, Secretary.

Sub-Committees

- 1. Arrangement and Attendance Committee: Carroll F. Reeves, Chairman; W. E. Martin, Harry T. Haviside, B. N. De Rochie, C. M. Le Count.
- 2. Reception Committee: Capt. Henry Blackstone, Chairman; Ralph W. Myers, George Swett, John P. Williams, C. R. True, John T. Greany.
- 3. Program Committee: Capt. A. G. Townsend, Chairman; D. N. Lillevand, John Davidson, W. J. Bush, Robert D. Spear, Capt. Edward C. Mausshardt.

LOS ANGELES PROMOTIONS

Stafford Harlow, former assistant district manager for American-Hawaiian SS. Company at Los Angeles, is now a Major, serving as Executive Officer under Major I. N. Randall, Commanding Officer of the Los Angeles District Transportation Office, United States Army.

From Fred Hooper, Southern California Manager for American-Hawaiian Steamship Company, PMR learns that William "Bill" Dooling has recently been promoted from rank of Captain to Major—with the U. S. Army.

MARINE FIRMS AWARDED "E"

The Emeryville plant of Hubbard and Company, manufacturers of marine hardware and processors of hot dip galvanizing, was awarded the coveted Army-Navy "E" February 10, 1943. Captain Stanley M. Haight, U. S. N., Commanding Officer of the Naval Net Depot, at Tiburon, California, presented the award to Wallace W. Glosser, vice president, on behalf of

Secretary of the Navy Frank Knox. Lt. Col. William Chamberlin, Signal Supply Officer, of the United States' Army, awarded the pins to the Hubbard employees represented by Richard Thurston.

In accepting the award in behalf of his company, W. W. Glosser, pledged the continuing increased efforts of his entire organization so long as this nation has need of their productive output. Mr. Glosser explained in his address that although the award was made on the basis of their production of materials for our Navy, many standard hardware items and construction specialties are being supplied to the various branches of the armed forces. He pointed out that as these items were usually handled through their distributors Hubbard and Company did not become directly identified with their supply.

In traditional Hubbard style an open pit barbecue supper was held in the plant for all the employees and their families immediately following the presentation ceremonies.

SHORTAGE OF ENGINEERS

The War Shipping Administration has issued another appeal for marine engineers, stating an "emergency" shortage exists. All engineers shore-side are urged to report to WSA offices in Seattle, San Francisco or Wilmington, California, for information and assignment to ships.

V. P. RETURNS

After serving for 21 months as director of traffic for the War Shipping Administration, A. E. King resigned his post in Washington. He has returned to his duties as vice-president of the Isthmian-Steamship Co., in New York.

TRANSFERRED

George Ludwig, well-known in Pacific Coast shipbuilding circles, has been transferred to New York by the Los Angeles Shipbuilding & Drydock Company, to represent them at that port.

LOSSES ANNOUNCED

The War Department's announcement of the loss of our well-known Pacific Coast operated ships used as part of the transport service to the American occupation of North Africa:

Transport Tasker H. Bliss, ex-President Cleveland, 12,568 gross tons, American President Lines; Transport Hugh L. Scott, ex-President Pierce, 12,579 gross ons, American President Lines; Transport Leedsown, ex-Santa Lucia, 9,135 tons, Grace Line; British tircraft carrier Avenger, ex-Rio Hudson, 17,500 gross ons, Moore-McCormack Lines, Inc.



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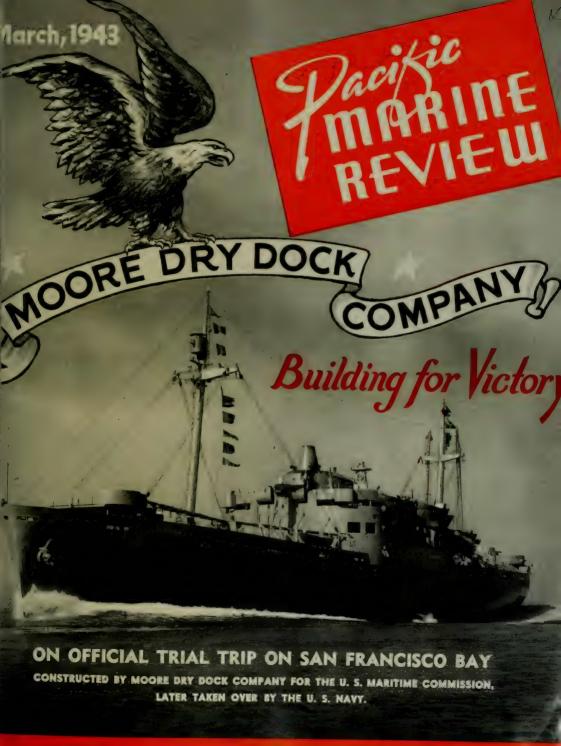
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Pacific American Steamship Association

Shipowners Association of the Pacific Coast

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Pacific MARINE REVIEW

Shipyard Labor

MANAGEMENT AND union labor are both alarmed over absenteeism and lost-time accidents in ship-

The National Safety Council in Febru-

ary published this statement:

"America's shipyards, working night and day to turn out every possible ship, lost enough time through accidents in 1942 to have built 100 additional Liberty ships."

The California C.I.O. Council declares that the shipyards of the San Francisco Bay area alone lose 20,000 man-days of effective labor daily through absenteeism and improper utilization of labor. On the basis of an 8-hour day, this would mean that enough man-hours are wasted in the Bay area shipyards to produce another 100 Liberty ships a year.

These statements indicate very alarming conditions, especially when all the shipyards are advertising for more men.

To correct these conditions, the Maritime Commission and the Navy Department after a thorough survey have established minimum medical and safety standards for all shipyards, calling for the following provisions:

1. Adequate medical and hospital facili-

ties to be provided for all workers.

2. Development of standardized report forms to record the frequency and causes of accidents for the entire industry.

3. Establishment of uniform regulations

for air raid protection.

4. Provision for improved eating and hygienic conditions in shipyards.

5. Provision for proper ventilating facil-

ities in closed places.

6. Provision for the issuance of personal protective devices such as goggles, protec-

tive masks, safety shoes, etc., and training in their use.

- 7. Placing upon management the responsibility of providing safe working environment; training of employees for safety; establishment of an accident record and reporting system which will definitely tie into nationally uniform reporting, record and statistical requirements; appointment, where necessary, of a safety engineer and staff to install, maintain and properly supervise the program.
- 8. Cooperation between workers and management in preventing accidents and promulgation of safety rules, through labor management and safety committees.
- 9. Special emphasis on safety clothing, particularly for welders and women workers.

10. Protection of eyesight through the establishment of proper lighting in yards.

11. Special protection through adequate safeguard devices on all moving machin-

erv

At the same time, the National Safety Council in collaboration with the Maritime Commission and the Navy is inaugurating a contest between American shipyards to try and reduce the accident frequency and severity ratings.

Absenteeism, which in Pacific Coast shipyards runs from eight to 12 per cent, is being put on the spot by department contests of various kinds in much the same way that attendance at kindergarten is

encouraged.

From all of these conditions, coupled with remarks from competent British observers, it occurs to this editor that perhaps we are putting too many men on the shipyard pay rolls. It might be that all these "man hours" not being efficiently utilized are the very man-hours that are needed in the farm belt to prevent dairy herds from

becoming rather poor beef and to keep the food supply up to par for ourselves and for our allies.

"We cannot escape history. We have supreme confidence that with the help of God, honor will prevail. We have faith that future generations will know that here, in the middle of the twentieth century, there came the time when men of good will found a way to unite and produce and fight to destroy the forces of ignorance, intolerance, slavery and war."

-President Roosevelt.

Pay As You Go

HE CONGRESSIONAL hearings on various pay-as-you-go plans for financing the war seem to overlook one very fundamental consideration in regard to taxes in a democracy.

Paying of taxes and buying of War Saving Bonds under a democratic form of government are duties and privileges of free citizens. They are not penalties imposed

on criminals.

The present hearings are not on the question of "forgiving 1942 taxes," but on whether we shall change the computation for 1943 taxes from the 1942 income basis to the 1943 income basis, and collect most of those 1943 taxes on a monthly basis at the source.

Taxes for 1942 are already paid, having been computed on 1941 income basis. Taxes for 1943 are current, and if we choose to shift the basis of computation one year ahead, the Treasury Department will have larger collections from the greater income, and will have far less expense in collecting and auditing, and greater net results to apply on war expenditures.

We thoroughly object to the Treasury Department officials thinking they have anything to forgive or any right to forgive anything in regard to taxes imposed by

ourselves through Congress.

"A year ago the Japs ripped off my arm at Pearl Harbor. I renew my pledge to make my 'stinger' work just as hard and effectively as the gun I left behind me."

OBIE BARTLETT, 25-year old Negro swing-shift welder at Calship.

California Again Leads in Shipbuilding

HE 81st annual meetings of the Board of Managers and of the members of the American Bureau of Shipping held at the Bureau's new building, 47 Beaver Street, New York, on February 23, focused attention on the remarkable records in construction made by American shipyards in 1942.

J. Lewis Luckenbach was reelected president for his eleventh term, and the other officers were reelected as follows: David Arnot, vice president and chief surveyor; Joseph W. Powell and Samuel D. McComb, honorary vice presidents; Jerome B. Crowley, treasurer; John W. Cantillion, secretary and assistant treasurer; and Kenneth D. Hill, assistant treasurer.

The following eight managers were elected to the board: Percy Clubb, 2nd; Homer L. Ferguson; Basil Harris; B. B. Howard; Roger D. Lapham; Joseph T. Lykes; Henry H. Reed; and H. Garrish Smith.

Some very striking figures on American shipbuilding were brought out in remarks by President Luckenbach.

American shipyards during 1942 produced in seagoing merchant tonnage 719 ships, with a carrying capacity of 8,000,000 tons and a measurement of 5,341,378 gross tons. This tonnage is amost three-fourths of the total American merchant seagoing tonnage of 1939, and more than one-half of the number of ships. The gross tonnage is greater than the total seagoing tonnage owned by Japan before the war.

"Pacific Coast shipyards completed 50 per cent, or 363, of the seagoing merchant vessels; the Atlantic Coast yards contributing 36 per cent, or 259 ships; and the Gulf Coast 14 per cent, or 97 vessels of the total. The State of California, which prior to 1941 had not produced a seagoing merchant type vessel in 20 years, once again, as in 1941, led the nation with 245 completions, or 34 per cent of the grand total. Oregon ranked second with 114 and Maryland third with 93 ships."



SUNRISE AT MARINSHIP IS A TREAT TO THE WORKERS ON GRAVEYARD SHIFT

Marinship Changes

FROM STEAM RECIPROCATING LIBERTYS TO TURBO-ELECTRIC TANKERS

JUST A FEW MORE OF THESE LIBERTYS are to be built at Marinship and then the natire yard will be concentrated on tankers. This Liberty, one of many built by the ard, is ready for departure for ports unknown.

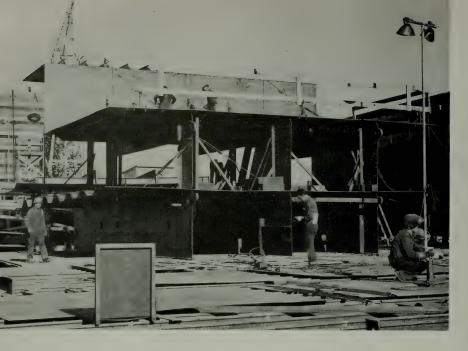


Marinship Corporation operates a yard originally designed to produce EC-2 cargo carriers. It is proud of its record in construction of 'the yard and also in the construction of these Liberty ships.

Out of several six-way yards projected in the spring of 1942, Marinship alone made deliveries before the year was ended. However, in the fall of 1942, orders came from the Maritime Commission that Marinship should change over to the building of large tankers.

The technical staff of the yard immediately began laying plans for the change. Today, five ways are in tanker production, and one way is still devoted to Libertys.

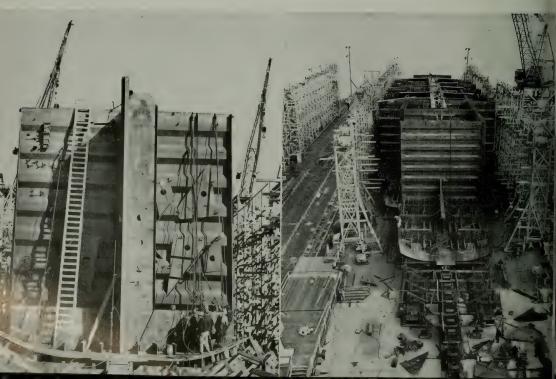
Our illustrations show the amazing progress on these tank ers. They will: be steam-turbine drive with electrical speed reduction between turbine and tail shaft; have ample fuel capacity for long-distance range; have a good turn of sea speed; carry huge quantities of petroleum and distillates; and be equipped with cargo pumps capable of discharging entire capacity in less than 12 hours.

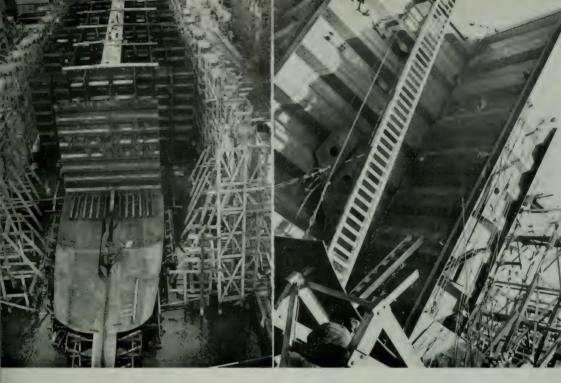


PREFABRICATING work on tankers goes forward as this 70-ton section is ready to be placed on a hull.

TANKER BULKHEAD looms above a group of workers on one of Marinship's five ways that are now building tankers.

LOOKING DOWN on one of T-2 type tankers from the bow end. This hull will be Marinship's first tanker to go down the ways.



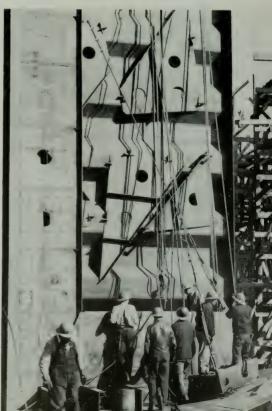


STERN VIEW (above, left) of a T-2 type tanker. The triangular pieces shown on the bulkhead, center, are stiffening brackets. ANGLE SHOT (above, right) of a T-2 type tanker under construction at Marinship.

JUST TO PROVE that there IS something new under the sun, we present Miss Marian Carrico, first woman scaler to be employed at Marinship, which now has a crew of ten women doing the work formerly considered to be a man's job. Paul Everett, tank scaler foreman, left, decided that women, provided they were small of frame, would make good scalers for work around the inner bottoms.



WORKERS diligently on the job on a tanker bulkhead, anxious for the day their first tanker is put afloat.





CRIPPLED SHIPS slip in and repaired ships briskly move out of the Moore Dry Dock Company yards with monotonous regularity... on an average of one every 10 hours since December 7, 1941. Garbed in strange costumes, these employees present an eerie sight.

E WEARY SHIP, flying the flag of a fighting Allied nation, limped into the Moore Dry Dock Company's yards on the Oakland Estuary. Its overworked engines barely coughed the ship into docking position. While it was being hoisted out of the water aboard the drydock blocks, telephones rang in hundreds of homes in the bay area. Sleepy men, who only six hours before had completed a 24-hour long stretch of work, answered the clamoring telephone. They listened quietly to the filtered voice at the other end of the line. No response was needed. They hung up the receiver, wearily dressed themselves, and stepped into the night en route to their tools and their shops in the Moore yards.

They were a section of one of the "repair gangs"—those doughty, skilled and hard-working men who have established for the Moore yards a remarkable received turning out on an average of one repair or conversion job every 13 hours since the Japa-

nese began their undeclared war against the United States on December 7, 1941.

Their job, an unpredictable one, is vital in wartime shipping circles. Repair jobs are increasing in numbers geometrically with the increase in new ship construction and the forced schedules of established lines. As the older ships, and their newly-built sister vessels, ply the sea lanes, much like a shuttle bus service, the need for rehabilitation of the overworked vessels increases.

635 Ships Repaired

The Moore yards, with their extensive drydocking facilities in Oakland, Alameda, Richmond and San Francisco, perform more than 60 per cent of all the repair work done in the San Francisco Bay Area.

Since the war began for the United States, the Moore yards have converted or repaired approximately 635 ships. These repair jobs have been performed on vessels flying the flags of all mari-

Ship Repair

RECORD AT MOORE DRY DOCK COMPANY

by Pat Martin

time Allied nations and ships of all types.

In repair work, there is one unwritten law—the job must be finished on time! The deadline must be met! Every vessel has its clocklike schedule to meet, and every moment lost in repair work jeopardizes the ship's reassembly in its designated convoy.

And in all of the repair jobs which the Moore employees have performed, not a deadline has been missed. Nothing—absolutely nothing—is allowed to stand in the way of meeting a ship repair deadline.

Ahead of Schedule

And, in the midst of this great repair task, the Moore employees have steadily kept ahead of schedule on their new construction work. Scores of new ships are being constructed in the Moore yards-cargo ships for the United States Maritime Commission, auxiliary ships for the United States Navy - complicated ships, highpowered ships, speedy ships. New ships of many different types are being constructed, on schedule, though often hundreds of highlyskilled craftsmen are pulled from the new jobs to perform repair duty on broken ships returned from convoy duty.

New construction work is care fully planned—from the blue print stage to delivery of a ship; all concerned with construction of the vessel are aware of the steps to be taken days, weeks and months ahead of actual execution.

With repair work, however, the unpredictable enters the picture. Few repair jobs are alike. Repair jobs may range from the wellknown "once-over-lightly" - removal of marine growth and general hull cleaning, to highly delicate engine and rudder work orders, to to complete a new bottom on large sections of the hull. Repair work requires ingenuity on the part of management and a high degree of skill on the part of craftsmen. Repair craftsmen are tops in the shipbuilding industry; they receive a bonus for their particular type of work, for they must be highly skilled in their chosen field of endeavor, and at the same time trained to cope with the unpredictable tasks which they face on newly-arrived repair jobs. There are no blue prints handy for ready reference on wartime ship repair jobs. And the hours-repair men do not work the regulation eight hours a day. Work does not stop on repair jobs. The gangs work as long as they can stand the gaff, take as few hours of rest as absolutely is necessary and hustle back to the job to get the ship to sea again carrying vitally-needed sinews of battle to our fighting men on all the fighting fronts in this global warefare. Repairmen say, however, that the energy, initiative, ingenuity and perseverance which they must expend and exhibit in their jobs are well repaid by the personal satisfaction of knowing the importance of this phase of work in the war effort.

High Skills Needed

Ingenuity of repairmen is illustrated very well by one recent job performed in the Moore yards on a foreign Allied ship docked for emergency repair work. This job required careful planning, speedy and accurate work. It was a rush job, too - the installation of a crankshaft which had to be made from parts of three old ones. After the shaft had been made, it had to be lowered into the ship in four sections. Each section weighed seven tons-28 tons of crankshaft! The operation required nine hours. Lowering the sections down into the engine room required complicated rigging work. "We just draped the engine with chains and lowered away," said Jack Frost, veteran Moore quarterman rigger, simply. Then the marine machinists took over. They spotted the bearings. This required utmost accuracy and care for a ship's very life depends upon the correct working of its bearings and crankshaft. But the job was finished in record time; the ship sailed away before deadline was reached; and the tired skilled workers went home to rest in anticipation of another rush call at any time within the next few hours.

Crushed from collisions, with



EXPERT MACHINISTS of Moore's repair a crank shaft of a foreign ally's ship.

holes in them spouting precious cargo oil, or with smashed bottoms from beachings, the ships come into Moore's docks for hull jobs. The work orders for some of these repair jobs at Moore's would make a good day's reading. Jobs big and little must be performed with meticulous care and completed on time.

In addition to new construction work and repair jobs, Moore's is a great center of ship conversion work. Giant passenger vessels and great cargo ships are converted to war transports for cargoes and troops—wary travelers of the deep—bristling with guns able to give battle—and equipped with every available safety device for use in the event of disaster.

SKILLED REPAIRMEN of the Moore Dry Dock Company are shown swarming over a stricken Norwegian ship, which soon will be on her way to carry needed supplies. HER BOTTOM extensively damaged, a great cargo vessel is drydocked and is returned to sea duty in record time.







W E L D M E N T T E C H N I Q U E

PERFECTED BY

WEBSTER-BRINKLEY

GEAR CASE WELD-MENT vacuumed at the start of the production line of electro-mechanical steering gear.

HE WELDMENT technique is becoming increasingly important in the marine machinery output of the Webster-Brinkley Company, Seattle, Wash., according to George Gunn, Jr., president.

The use of a combination of steel castings, rolled sections and plates in one weldment has achieved some noteworthy results in the interest of speed-with-precision.

Weldments have established their value on a number of counts. On the count of speed, the use of weldments detours the lengthy and costly pattern stage of production, and on the count of precision, the use of steel plate makes possible better conformity to tolerances. A weldment needs only onehalf of the machining time required on the same unit as a casting. All rough machining-drilling and tapping and part of the flat work -is done on these units before weld assembly is begun, all on precision weldment fixtures-and thus work on large machine tools is held to a minimum.

Moreover, a weldment means a saving in weight of up to 40 to 50 per cent of the same unit in cast steel—a factor highly important in marine machinery. A high degree of strength in the completed unit is found to be still another positive characteristic of the weldment due to more advantageous distribution of metal along lines of highest stress.

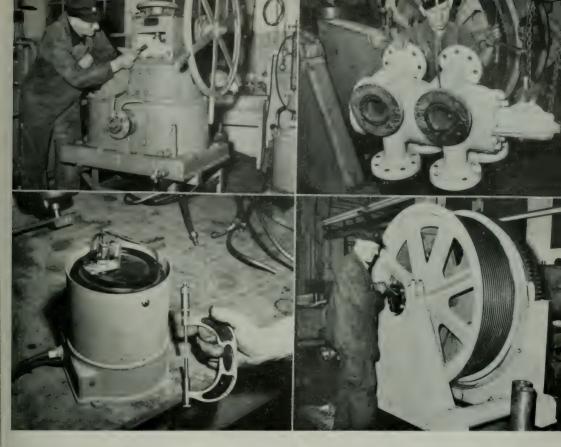
The upper and lower gear cases of the quadrant electro-mechanical steering gear are instances of using weldments in lieu of cast pieces. In these units, the bearing sleeves are steel castings, used in combination with the steel plate of the body proper.

A major application of casting and steel plate combination fabrication at Webster-Brinkley is the pedestal base of the airplane crane. This heavy duty part, 5½' in diameter, consists of the base proper and the gear case cover. The parts for oil retainers are castings and the main portion of the unit is welded steel plate. The eight-way transfer valve used on

the same piece of deck machinery is another interesting weldment. In this instance, the weldment technique eliminates a quantity of core work. This part is steel plate formed around cast rings as a base for piston and valve liners, and pipes of seamless steel tubing are welded on. Also welded are the end flanges of the pipes.

In the fabrication of very large, heavy duty parts such as the drum, also used on the airplane crane, the fact that there is greater control over the quality of metal used in a weldment is especially important in achieving a precision job. The frame of this part is welded steel plate, with the drum, brake drum and shaft welded up as a unit, thus eliminating fitting of shafts and keys. This construction results in a marked saving in weight-a factor highly important in marine machinery. The anchor bolt castings are welded on, and, after turning, the flange is welded into position.

The production picture at Webster-Brinkley shows an increased use of the weldment as a way to build the all-essential speed-with-precision technique. The design of a new electrical hydraulic steering engine calls for the fabrication of the main base in the form of one weldment. On this, as on other weldments, special jigs are designed to insure interchangeability of



parts, and consistent conformity to specifications. The jig for the electrical steering engine body is a weldment in itself.

Application of the weldment technique is, of course, just one phase in a many-sided production program which has focused national attention to the Webster-Brinkley organization. Development of assembly lines for steering gears, produced formerly on a one-at-a-time basis, is one of the Webster-Brinkley industrial "firsts," and feeder lines of parts extend from a network of some 67 suppliers. This company pioneered in the use of subcontracting to expedite production.

In addition to Mr. Gunn, the plant management is comprised of Thomas J. Bannan, vice president and co-owner; Harold H. Hartman, general manager. Tyler Sprake is chief engineer.

WELDMENTS DETOUR PATTERN STAGE

AT WEBSTER-BRINKLEY, weldments have established their value on a number of counts, notably in the way of detouring the lengthy and costly pattern stage of production, and in the way the use of steel plate makes possible acme conformity to true tolerances. The above illustrations give an idea of how the company has developed this technique.

TOP ROW, left: Inspecting oil system of electro-mechanical steering gear prior to testing. Gear cases of this unit are weldment assemblies. Top row, right: The eight-way transfer valve, part of an airplane crane, is a weldment, wherein the technique eliminates a quantity of core work. Bottom, left: The heart of the photo-electric pilot, one of a line of steering gear control equipment. This view shows the photo scanning unit, consisting of a small, continuously burning electric light whose rays are concentrated upon a photo-electric cell by means of prisms and lenses. The arrangement is such that the slightest deviation of the compass card from the predetermined course will cause a counteracting movement of the rudder which will return the ship to its course. Bottom, right: Webster-Brinkley accomplished an enormous saving in weight in the construction of this airplane crane unit, one of the long list of such deck machinery produced by the company, by the use of the weldment technique. The pedestal base of the crane is a weldment assembly, as is the drum, built up as a unit.



EVERY NEW SHIP requires drawings, equipment and machinery layouts and lists of material and fittings.

N THE BATTLE fronts, our ships must stand up against damage from torpedoes, bombs, projectiles and mines.

On the home fronts, those in industry must endure numerous physical hazards, aggravated by problems of housing, transportation and food. These are further complicated by urgent expansion and accelerating employment of new and inexperienced workers.

On the morale fronts, our shipbuilders, as well as other industrial workers, have a growing problem to meet. It might be called the challenge of safeguarding and arming the human mind.

• Modern life, even in peace-time, has set up speeds and tensions that are often beyond the capacity of the average mind to withstand. World war has added to these stresses. There are world tensions, national tensions, and community tensions which may play havoe in any home or may stir up unabsorbable conflicts in the mind of any individual.

If we do not squarely face this issue, all industry and production will suffer accordingly, and the war will be prolonged with increased loss of life on the firing line.

Shipbuilder And

A CLEARING HOUSE FOR IDEAS ON THE WAR-WINNING JOB OF WHOLESALE PRODUCTION OF SKILL IN THE MARITIME CRAFTS

MENTAL ARMAMENT

In Wartime

by Stewart F. Bryant, Lieut.-Comdr. U. S. N. (ret.)*

Instructor in Problems of Shipbuilding for Supervisors,
E. S. M. War Training Program, Stanford University.

Our first move is to recognize the growing threat of these mental strains. The second is to see what we can do about them. In this summary, we shall only seek an example in each kind of tension, and then outline a few of the protective measures available.

Internationally

Let us take the millions of our citizens whose parents, or who themselves, originated in enemy areas. Many of these citizens are married to old native stock, or those whose antecedents are from allied areas. Tragic disagreements have resulted. Mental clashes have often been too much to carry. There is a way out in many cases. Any person can justly take pride and can even maintain a certain loyalty to the best in the historic culture of any race or nation. Then as long as they remain completely aloof from political loyalty to an enemy governmental control, there seems to be no reason why

they cannot be counted on, and count themselves as good and loyal citizens.

Nationally

Our spirit of competition as an energizer of civilization has led to inherent class rivalry. Each class has had the right in our democracy to plead and argue for its own interests and organize to promote them. Theoretically an objective can be sought by any group until it begins to drain from the common welfare and the common good. At that level it should stop. What we can now see with patriotic understanding is that in wartime this level must be seriously and sacrificially lowered on behalf of the security and survival of the nation. It is not a question of waiting for all other groups to set the example. It is more a question of all groups taking the lead at once. Class strife at the front would not win many battles.

[•] The opinions of assertions contained herein are the private ones of the writer and are not to be construed as solitical or as reflecting the views of the Navy Department of the naval service at large.

Seaman Training

SUBMARINE PETTY OFFICERS attend General Electric's school, held in callaboration with the Navy, to learn operation, maintenance and repair of electrical equipment aboard submarines. Instructor W. E. Jacobsen explains propulsion layout.



Community Life

We can consider the trying situation brought about by acute problems of housing, transportation, food and illness, and even a shortage of conveniences, once fondly regarded as necessities. To these problems we must add the widespread dislocation of normal life by the increasing shifts of population towards war industrial centers, and the consequent strains imposed upon family and individual adjustments to new conditions. Time is needed to straighten out these problems: time and patience, and vigorous effort by leadership to remedy the dangers involved. But don't forget-time on the battle front is life. Time saved at home under relatively less hazard saves life for those abroad who carry the greatest risk of all.

Personal Industrial Relations

There are plenty of examples of injustice, needless hardship, poor placement, delay, confusion and grievance after grievance. These things have always existed and always will exist where democracies go to war. No system, no planning, no great effort is ever perfect. It is part of every large game. But, again, in the war zones, any ship, or any regiment, or any flight squadron may be so placed in the fortune or misfortune of war that it has no chance even to survive. That game, and shipbuilding as well, takes strong hands, stout hearts, and enduring virile minds.

So then, in this time of need for comprehensive human engineering, what can we do about mental armament?

Mental Armament

First. There is the understanding of subconscious behavior and our knowledge of the continuing impacts of earlier and even forgotten abnormal experience. The example we use is trivial but illustrative. A foreman was incensed at the idea of women in shipbuilding. Nothing could change his repulsion, until it was found that he had been bullied around during his boyhood by a flock of older and bigger sisters. Rather than acknowledge the lasting potency of this rough influence, he finally changed his mind.

Many of our fears and our prejudices and our resentments are in great measure due to similar abnormal early pressures. Why not search for them to understand and climinate our mental twists?

Second. We come to the opportunity and necessity of avoiding situations which some individuals are not fitted to withstand. A young new worker from an interior town, for example, suddenly finds himself with maximum pay, (more than he ever hoped for) and minimum wholesome recreational opportunities. A dangerous mixture. A handy saloon should not be the answer.

Third. The provision by government, management and worker, as well, of wholesome substitutes for the diversions and dissipations which may rot the very efficiency of the yard forces. There is an idea picked up years ago in the Near East from a foreign critic that may help here and help carry on even through the postwar years.

"You Americans," he said, "with such opportunities in this world—opportunity given to no other people—if you would only pick your pleasures and your diversions from those things that have rewards instead of penalties, that no one or nothing can ever take away from you, and those things which do not need a great deal of money."

That's a big order, but a good formula. What are these safeguards? Our old friend Plato once doped it out, but we don't often find him in the "funnies" and only Pluto appears in the movies. Plato said something about, "good friends, good books, sports, music, forums (clubs), and nature, and some Greek etceteras like art, architecture, and sculpture." But the same old principles remain. And accorations give a clue as to the future stability of any modern society.

Next, what do we more specifically need in arming a mind in a world overloaded with increasing strains? We can list four essentials: great objectives, cardinal principles, fortifying attitudes, and opportunity for service. These may vary greatly in time of peace,

(Page 63, Please)

IN A MOCK-UP prefabrication of pipe systems, it is often possible to alter arrangements with substantial savings in pipe and fittings.

HE MARINE PIPE fitter has always been a peculiar individual with a peculiar mental twist that fitted him to undertake a peculiar job.

With a stub of a pencil behind his ear, a strip of thin wood template material, a tape line or a two-foot rule, and a pipe plan, he would disappear for awhile in the hold or engine room of a steamer, and emerge with certain mysteri-





LEARNING MARINE PIPE FITTING

At Oregonship

ous marks and figures on his board, the meaning of which could be deciphered only by himself. He would then go to the pipe shop and work over a length of pipe, fashioning it to certain curves and offsets, and fitting it with certain flanges or couplings. When finished, he would take it down into the ship and put it in place, usually with two to three try-and-fit adjustments. When finished, the pipe arrangement would bear some slight resemblance to the pipe plan.

Piping arrangements are serious matters aboard ship, and there are many systems of piping aboard a modern ship, each of which has its own peculiar problems. To enumerate some of these systems, we have:

- 1. The main steam.
- 2. The feed water.
- 3. The auxiliary steam.
- 4. The main lubricating oil.
- 5. The auxiliary lube oil.
- 6. The fuel oil service.
- 7. The fuel oil transfer.
- 8. The steam heating.
- 9. The culinary steam.
- 10. The hot water.
- 11. The drinking water. 12. The sanitary salt water.
- 13. The fuel oil heating.
- 14. The fire and bilge. 15. The refrigerative service.

All of these systems have to be

arranged in such a manner: that they will function efficiently and promptly; that they will not interfere with each other, even in congested spaces; and that the least possible pipe is used in each.

In this matter of marine pipe fitting, as in many other departments of marine architecture, we are learning much from the so-

EXHIBIT of a few of the fittings produced by welding from pipe scrap. called prefabrication type of mass production of ships as practiced in the new Liberty shipyards.

The new type of pipefitting work first began in the Oregon Shipbuilding Corporation vard at Portland, the yard which has consistently held the leading record for days consumed from keel laying to delivery in producing Liberty ships. Here the boss pipe fitter conceived the very simple but very valuable idea that instead of sending the pipe fitter to the ship, he would bring the ship to the pipe fitter.

A large open loft like a mold loft was devoted to pipe shop purposes, and on part of the floor, the tank tops of a Liberty vessel were laid out in frame spaces full size. Mock-ups of pumps, engine foundations, bulkhead manifolds, and heat exchangers were made accurately to size, with all flange connections precisely spotted.

When a system of piping was to be prepared, the mock-ups of every item served by this piping were located exactly on the floor, and the piping was cut, bent and fitted exactly right in the shop. It was even tested there. All parts were plainly marked, and the entire system with all its fittings and hangers or stools cut very approximately to fit the ship, was assembled to go down to the ship and be installed as a unit.

This system soon began to show some very notable results, not only in saving of time and the speeding up of hull assembly and outfitting, but also in the saving of pipe, pipe fittings, and stools and hangars.

Marine draftsmen lay out these piping systems and lay out a master plan, combining all the systems so as to avoid interferences. The number of marine draftsmen,

PACIFIC MARINE REVIEW

having sufficient experience to dethis work with any great degree of success, is very limited in America.

When the Oregonship pipe shopbegan its type of pipe system prefabrication, and engineers and draftsman came down to see how it was done, their eyes saw for the first time actually worked out in space the plans they had set down on paper. To them and to the pipe fitters it soon became apparent that certain curves, certain pipe joints, certain valves were not only superfluous, but in many instances detrimental. Inspectors also saw whole systems for the first time, and these facts were also apparent to them.

The result was a rearrangement of many of the systems, resulting in a total overall saving of many tons of piping and of fittings. A tolerance of 1/32 inch is maintained on assemblies of pipe systems at this shop and is found to be very satisfactory for installation in the ship.

The shop is well equipped with pipe cutting and threading machinery and has a large battery of U. S. Pipe Bending machines.

Large numbers of excellent fittings and valves are fabricated by welding from short pipe ends and trimmings and a stock of such fittings is maintained from which to draw when deliveries of standard fittings threaten to hold up jobs. A very interesting adaptation is found in the gasket room of this shop, where a printer has installed an old platen printing press for cutting gaskets from rubber and other textiles. The dies for this cutting are made in exactly the same way that the printers make dies for cutting circles, ovals and other shapes in paper.

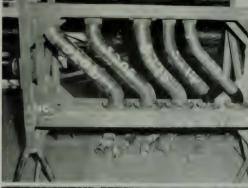
This type of pipe shop with various modifications is now installed in many of the Liberty yards, and its operation is saving pipe by the ton, fittings and valves by the gross, and time by the thousands of man-hours.

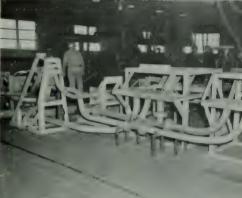
Intelligent welders and burners can be made into super pipe fitters in a few days in this type of shop. NUMBERED pipe bends in a mock-up jig.

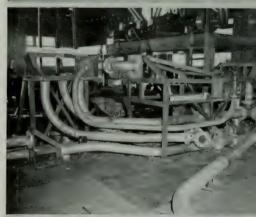
MAIN and AUXILIARY feed pump assembly of suction and discharge pipes. Mockup of pumps is located accurately within 1/32" of setting in ship.



GENERAL VIEW of part of the pipe shop floor, showing several simple assemblies of pipe and fittings and a pile of fabricated welded flange pipe bends in foreground.









MARCH • 1943

TIME AND JOB COORDINATION IN THE AVERAGE SHIPYARD

by Charles M. Stevenson

In the last war, our slogan was "Capture the Kaiser"; in this mess, our best bet seems to be "Copy Kaiser."

I realize I touch on what is, perhaps, a slightly sore spot of envy; but, leaving aside the fact that the type of ship he is building has been streamlined for mass production, still there must be some definite reason why this man's plants can produce at a rate so far in advance of others. I have not worked in any Kaiser plants, so I cannot analyze his formula; I can, however, point out some flagrant violations of common sense which I have seen in other yards, which certainly account in part for their slower rate of production, and perhaps by this somewhat negative approach discover some of the methods Kaiser must have AVOIDED.

Let us consider the one matter of overall coordination of construction. During the last war, I was part of a crew installing auxiliary foundations. It became immediately clear that one of our biggest problems was timing, inasmuch as it was necessary that we put in most of the seatings while the boat was on the ways and while a level could be used effectively. On the other hand, many such foundations could not be installed at that period of the ship's construction because they interfere with other operations. For example, certain seatings on the bulkhead must wait until main engines are installed because, once in, there is not room to allow the lowering in of the engines. Again, numerous seatings must be welded to the tank top before tanks can be properly tested and approved; whereas, a boat cannot be rested and oproved. Thus the matter of the timing of the various operations of various crews, with relation to each other and with relation to the ordinary ship workers' crew becomes of the greatest importance in getting out the ships without confusion.

It would seem obvious that one of the first and most important men chosen to work in a shipyard be a "time-planner;" a sort of coordinator for the specialty crews and the regular shipbuilding crew. Yet I have seen ship after ship slowed up or sit idle for weeks for no better reason than such easily prevented errors as having the tank testing crew suddenly send down word to some specialty crew that the tanks had been filled but certain sea cocks or foundations were not yet in and said tanks could not be passed until they were in-yet this would be the first the specialty crew had heard about them or had any knowledge that they were supposed to have done this important work by this time. Such errors are multiplied by thousands, and, so far as I have ever seen, the only solution has been a gradual adjustment between the various crews themselves, a matter which takes weeks of time and a number of boats to work out. In one crew in which I worked, we solved this problem largely by virtue of the fact that my crew-foreman was a so much better an organizer than his colleagues that we speeded ahead of the others, cutting installation time from three months to two weeks, thus removing us from interference with our co-workers. Almost immediately, however, we were checked by interference with the groups who must precede us on the boats; thus resulted another time inefficiency. We have too few racehorses in shipbuilding to

be able to afford the luxury of check-reining any of them. All this readjustment took time and expensive man-hours and could always be blocked by any non-cooperative foreman; and we all know this exists.

These matters should have been worked out by a man whose particular job it was to visualize just such time-emergencies and work out remedies for them. He should understand well the problems of the management and the problems of the workers. He should be not just a book-trained man, nor just a work-trained man, but a combination of the two, and above all he should have had enough actual working experience that he will know well the specific details of each crew's work and understand the needs of each craft. He must be backed with authority to make necessary adjustments when they are needed. His plans could be very simply and graphically presented to the men by means of blackboard charts, each craft represented by colored date lines indicating the approximate time for completion of work on each hull.

One of the worst results from the lack of smooth flow of operation is the drop in morale of the workers. No man likes to be part of a failure. The problem is worse in this war than it was in the last because we have fewer skilled mechanics in ship construction. There were, perhaps, not many more skilled ship workers then but there was a much larger pool of skilled mechanics of various sorts to be diverted into shipbuilding, and this pool was not so seriously depleted by the draft as it is in this war. Unskilled and uncertain workers are more easily discouraged by failure than men who feel the confidence of efficiency in themselves.

There are other problems, such as telephone intercommunication between hulls, outfitting docks and boats in the water, which would save many hours of time and miles of walking for every man concerned; or the proper proportionate number of welders and burners for the number of ship-

ntters and other crafts on a job (and who has not waited forty eight Louis to get a lip welded or burned.) But no problem seems of more importance and none has a more obvious solution than this of FIME AND FOR COORDI NATION; none will do more, by its solution, to speed the end of the wait.

MENTAL ARMAMENT

(Continued from page 59)

last in time of war, it is crucially important to find some for common guidance.

Objectives

1s an objective, we have the winning of this war in the least time, along with a future opportunity to build, if we will, one of the finest and most enduring civilizations the world has ever known. We may fail in the latter, but the chance is open to us, and meanwhile, we have the higher inspiration in working for an objective far larger than ourselves, far more important than our individual troubles or our very lives. The very best way to down personal troubles is to develop loyalties to a cause or a society that takes us away from our own small individual interests. This theme takes one back to a strange analogy in Turkey, during the Dardanelles Campaign, where meetings were held by a sect known as the howling dervishes. The members of this unique society hit each other with rods, hung over sharp swords with no protection to their bellies, had eggs scrambled in their throats with hot irons, and stuck skewers through their scalps with blood running down their faces. The idea seemed to be that if they had enough faith in their cult they could not feel pain. There did not seem to be much particular value in the rituals of this group, but the theory certainly seemed to be pretty well proven.

Principles

As a principle, there is open for our adoption, both personally and collectively, something that the whole future of the world may depend upon—that policy of not assuming that we have a perfect monopoly of all the virtues but of bettering our own outlook, and the values of our own groupe or nation, by synthesizing democratically the adaptable values of any other group, nation or race in the entire world. That principle can resolve more conflicts and give more mental peace than almost any other in the book of hie.

Attitudes

As an attitude, there is one that ance of the fact that all life is struggle, and stress and that with out these it is mere decay. I think it was George Lawton who wrote of the well-adjusted person: "He would not change, even if he could, the fact that life is an endless struggle in which human purposes are hurled against external resisting forces, human and natural. He knows, and makes use of the knowledge, that in this struggle the person who fights himself least will have the most strength and the best judgment left for the outside battle."

We should add to this that calm water and comfortable sailing never made a fighting fleet, and that only from facing the storms, the hazards, and the obstacles of life is leadership ever born. Foremen and supervisors in shipbuilding are no exception to this formula for developing leadership.

Opportunities

As for the desire to serve, what is the basis of profitable work? Pay and promotion? Yes, society must always give proportionate reward for abilities and achievements. But that alone is spiritual poverty. A great American administrator once said: "There is no greater reward, nor any more enduring satisfaction, than in serving your fellow men." Yes, that is one of those things no one can ever take away from us, and as long as we have to keep on living with ourselves, the recollection of service rendered may be

Looking into the future, this task of caring for the human mind is going to become more and more

important. The trend of science, according to all the evidence we have, will inevitably create increasing speed, increasing complexity, and increasing tension upon the human nervous system. The accelerating development of modern communications will also bring out increasing social shocks, due to the differences of world cultures—shocks that appear fast er than our educational equipment can absorb.

In all of this task, one of the chief forms of protection will lie in giving the individual some form of devotion to a cause greater than his own personal interests, a cause that can divert him from his own problems to the security of a firm and abiding interest and belief in a worthwhile embracing objective of civilized life.

The immediate objective of the shipbuilder is the untrammeled realization that his strength, his health, his fortitude and fidelity belong to the building of his ship, and that that ship is a measure of the life and endurance and victory of those lads at the battle front.

So here you have a few suggestions for arming the human mind. Perhaps they will stimulate others to carry on the quest much further, for its possibilities are endless and its importance beyond description.

Paper Lifeboats

Victor Phillips of Vancouver, B. C., has built a paper lifeboat that floats and is seaworthy. He has put it through exhaustive tests to prove its value. Phillips began building paper boats two years ago, using ordinary brown kraft paper chemically treated. Three of the boats have been completed. They are built of light cedar framework, covered with 25 layers of paper, previously dragged through a glue bath. The first one completed has been in the water eighteen months and shows no signs of deterioration. Phillips has interested the Canadian army in sandbags made of paper and plans to start large-scale production.

Ky 1. Friet Paint thinking Fig 4. First Pout Lowering and Paint Loneving

ELECTRICAL

FIG. 1

THE PRINCIPAL CIRCUITS of the controller connected on the first point hoisting are shown. With the line switch S closed, contactors C are closed. A parallel circuit of the motor armature and resistor A is in series with the series field of the motor and resistor B—part of which is shunted out by a contactor. The motor shunt field is across the line with resistor F in series since the armature current is below the closing value for the relay FR. The shunt brake, which is not shown, is released and the motor armature turns over slowly. Depending upon the torque to be overcome, the speed characteristic for this first point in hoisting is shown on Fig. 1, point 1.

FIG. 2

IN GOING TO THE SECOND point the operator has changed the connections slightly. The resistor A has been taken away, which on point 1 was connected (shunted) across the motor armature. The voltage across the armature is increased, the speed of the motor rises so that the new speed-torque characteristic is as shown on Fig. 1, point 2, for hoisting.

FIG. 3

ON THE THIRD POINT, more of the series regulating resistance B is taken out of the circuit. Accordingly, its motor speed is increased to correspond with curve point 3, Fig. 1, for hoisting. For the fourth and fifth points hoisting, the contactors continue to short out the resistor B until finally, on the fifth point the armature of the motor is across the line.

The hoisting speed-torque characteristics for points 4 and 5 are shown on Fig. 1. The action of the field relay FR is shown by offsets in the curves. At less than 160 per cent of the torque, the motor shunt field is weak; above this value the full shunt field strength is obtained. On the fifth point this means high light hook speed, and for loads in excess of three tons (approximate), slow speeds on the lower part of the offset on curve 5. This characteristic occurs automatically because of the proper action of relay FR.

FIG.

THE OPERATOR wishes to lower the hook or load on the first point. The line switch S has been closed. All contractors C are closed. The solenoid brake releases. Here we have a motor with its series field shunted across the armature and its shunt field also assisting the series field. This high field strength, together with reduced voltage across the system (due to resistor A) causes the very slow landing speed shown by point I on Fig. 1. For all load values which overhaul the motor on the first point, the speed values are safe for the placing of any kind of cargo on the wharf, on the deck, or in the hold.

FIG. 5

THE OPERATOR changes the connections slightly when moving the controller handle to the second point low-ering. The series field has been weakened and the speed rises to the new values as indicated by point 2, Fig. 1. The offset in this curve is but slight, so that the field relay FR has little effect in changing the speed for light loads and the empty hook.

Increased weakening of the series field strength occurs when the controller handle is moved toward the fifth point in lowering. Refer to points 3 and 4 in Fig. 1.

FIG. 6

THE MAXIMUM WEAKENING of the series field is shown for point 5 lowering. Curve 5, Fig. 1, indicates the maximum speed in lowering. For very heavy loads this point will not be used by the operator since the lowering speeds are relatively too high. However, for the empty hook or light package, the fifth point set-up is desirable. The relay FR operates automatically without effort on the part of the operator.

EQUIPMENT FOR THE MODERN CARGO WINCH

By A. O. Loomis

Marine Engineering Department, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

events in the electrical circuit for hoisting and lowering operations of the modern cargo winch can be readily understood by step-by step examination of the procedure with the circuit broken down into its elements. It has been considered that the master switch handle has been moved slowly from one point to the next adjacent position. However, often the operator does not work in this way, but in-

stead moves the handle quickly over the entire range.

To accommodate such manipulation, inductive time limit relays operate automatically to give satisfactory acceleration and deceleration without damage electrically or mechanically to the equipment. To test this feature the controller handle can be moved from full speed lower to full speed hoist or vice-versa as rapidly as possible. The changing motor speeds will be effected smoothly. Under such

rough handling, the electrical equipment is truly "fool proof."

The motors, brakes and controllers have been standardized because quantity production is essential to the U. S. Maritime Commission. The 50-hp rating has been selected to handle rapidly the average cargo load; to move heavy loads on an all-day cycle without injury to the equipment; and to transfer the empty hook with the minimum loss of time.

Global Air Transport Before World War II

By Dr. Henry F. Grady

Great Britain has concentrated on developing air routes to various parts of the Empire. The British World Lines have run in two main directions: toward Australia, and toward South Africa. The route to Australia, after traversing France and Italy, ran through Cairo and Baghdad, along the Persian Gulf, and over India and Burma to Malaya, with a connecting service to Singapore from Australia and a branch line to Hongkong.

From Cairo, routes go to Teheran and Asamara and another branches out to the south and runs through the Anglo-Egyptian Sudan to Durban in South Africa, whence a line operated by the Union of South Africa reaches the Cape.

France developed early a thick network of international air services in Europe, and with her colonies overseas. French world air routes ran in three directions: To Indo-China (with an extension to Hongkong); to West Africa and on to South America; and to Central Africa and to Madagascar.

The Dutch services, in addition to an extended network in Europe, included the first world air route to the Far East, the Amsterdam-Batavia Air Line, a service from Java to Australia, and another to French Indo-China. The Dutch, prior to 1940, had plans for establishing transatlantic services to both North and South America, and to South Africa.

Germany had after World War I no colonies to serve, but it developed a domestic and European network foremost on the Continent, and then conceived many ambitious schemes for air services to all parts of the world. In the direction of South America, a Zeppelin service was organized in 1931, and a plane service in 1934.

The Soviet Union has a very extensive system of internal air services. Aside from short lines to

Mongolia and Afghanistan, Soviet aircraft have operated regular international services to Sweden, Germany, Bulgaria and China.

Japanese air transport has followed the Japanese Army to Manchuria and China. Prior to the war, Japanese plans contemplated the operation of routes to the Philippines, the Dutch East Indies and Australia, in consonance with their ambitions for a southward march of empire, and also eventually to Europe (via Bangkok) and to North America.

American hemispheric services extended across the Pacific, and the North and South Atlantic across Africa, into Central and South America, and to Canada and Alaska. Canadian air transport interests were reported in 1941 to be studying the possibility of establishing an air route to Siberia and the Far East via

Extract from address on Post-War Foreign



COASTAL TANKER
of the Maritime
Commission type,
12 of which are
being built on the
Great Lakes.

Shipbuilding on Great Lakes

RANGES FROM GIANT ORE CARRIERS TO "KNOCKED-DOWN" BARGES

miles from salt water, a dozen Great Lakes shipyards are building merchant vessels for the United States Maritime Commission to meet the Nation's wartime shipping needs.

The Mid-West program ranges from giant ore carriers, which will see service in the very waters where they are launched, to small "knocked-down" barges for use in war zones thousands of miles away. The vessels being constructed for ocean service will make their maiden voyage seawards through the Great Lakes, canals, rivers and other inland water routes.

Four states currently are engaged in the effort. Wisconsin leads the way with six shipyards building a variety of merchant craft. Ohio has three yards with contracts for 10 ore carriers. One Michigan yard is also building vessels of this type, and two yards in Minnes ota are producing coastal tankers and barges.

Two of the Wisconsin shipyards are building 27 dry cargo ships for coastal operation, more than half of the total of 50 vessels of this type contracted for by the Maritime Commission. The remainder are being built on the Atlantic and Pacific Coasts.

About 20 have been launched on the Great Lakes, and a number have been delivered. The "coasters" are 258 feet long with a deadweight capacity of 2800 tons.

The 12 coastal tankers under construction in a Minnesota ship-yard are scheduled for delivery in April. They are 220 feet long and of 1600 deadweight tons, with a tank capacity of approximately 11,500 barrels. Their small size and maneuverability make them less vulnerable to submarine attack, and they are well adapted for shallow water operation.

Eight already have been launched. The other four will be completed on the ways and launched in the spring as soon as ice conditions permit. Sub-freezing weather is holding up launchings throughout the Lakes region, but with the thaw multiple launchings will occur. One yard will have five "coasters" ready to slide down the ways in one day this spring.

The 16 ore freighters which will be delivered into service on the Great Lakes later this year are among the largest vessels being built for the Maritime Commission. Well over 600 feet in length, they will increase the total load capacity of the Lakes ore fleet by approximately 250,000 tons.

In contrast with these giants are the 78-foot, knocked - down wood barges being turned out at a second Minnesota yard. They are distinctly for war service. Shipped abroad in packages, the barges can be readily assembled with bolts and spikes to carry war supplies from ship to shore where docking facilities may not exist. A hundred have been delivered, and 50 more are on order. A number of larger type barges for use in domestic waters are also being built.

The remainer of Great Lakes shipbuilding is devoted to a special type seagoing tug. Eighteen are under construction at two Wisconsin yards. Nearly 200 feet long, these tugs are among the largest and most powerful vessels of this type ever developed. They will be used to tow reinforced concrete barges along the coasts of the United States and in the Latin American trade.

Critical wartime transportation needs compelled the conversion of many coastal vessels to deep sea service, and the Maritime Commission instituted its tug and concrete barge program to offset, in part, this decrease in domestic shipping.

Nearly 100 concrete barges are being built. About 65 will be a tanker type for transporting oil along the Nation's coasts, and 26 will carry bauxite and other communities between the United States and South American republics.

More than half of the big tugs being built on the Great Lakes to haul these barges have been launched, and all will be in service on salt water before the end of the year.

The shipyards in the Great Lakes region and the types of ves sels they are building for the Maritime Commission as of January 15 are as follows:

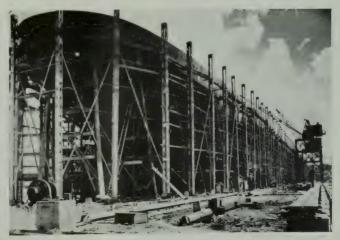
American Shipbuilding Co., Cleveland, Ohio, ore carriers; American Shipbuilding Co., Lorain. Ohio, ore carriers; Great Lakes Engineering Works, Ashtabula, Ohio, ore carriers; Great Lakes Engineering Works, River Rouge, Mich., ore carriers; Barnes-Duluth Shipbuilding Co., Duluth, Minn., coastal tankers; Walter Butler Shipbuilders, Inc., Superior, Wisc., coasters; Leathem D. Smith Shipbuilding Co., Sturgeon Bay, Wisc., coasters; Froemming Bros., Milwaukee, Wisc., oceangoing tugs; Globe Shipbuilding Co., Superior, Wisc., oceangoing tugs; Marinette Marine Corp., Marinette, Wisc., barges; Waterways Engineering Corp., Green Bay, Wisc., barges; and Scott Graff Co., Duluth, Minn., knocked-down barges.

Two yards in the Great Lakes region have completed their contracts with the Maritime Commission. They are Calumet Shipyard and Dry Dock Co., Chicago, Ill., which built five harbor tugs, and Lyons Construction Co., Whitehall, Mich., which delivered 50 knocked-down barges.



ELECTRICAL "WATCHDOG" LAUNCHED ON GREAT LAKES

Something for raiding Axis submarines to reckon with are the speedy electrical "watchdogs" of the sea, being built for the U. S. Coast Guard in Duluth, Minn., far from the ocean waters they will patrol. Above is shown one of the latest cutters sliding into Lake Superior from the ways of the Zenith Dredge Company. Highly maneuverable, these sleek craft carry the latest marine gear developed by the Westinghouse Electric and Manufacturing Company. The propeller is turned by an electric motor which gets its power from Cooper-Bessemer-Westinghouse diesel generators. Other diesel engines drive auxiliary generators, which supply power to Westinghouse controls, flood lights, radios, hoists, ship lighting and other devices. Everything is electric, right down to an electric dishwasher that makes life more pleasant for all hands.



ONE OF 16 LARGE ORE CARRIERS BUILDING ON GREAT LAKES FOR U. S. M. C.

EUROPEAN SHIPBUILDING IN 1942

HE YEAR 1942 saw the American shipbuilding industry increase and grow to an extent never before experienced by that industry in any country. This growth and the tremendous records in ship production accruing therefrom have occupied the spotlight of publicity to the exclusion of the shipbuilding efforts of other countries.

It is a very good thing to pause occasionally and see what your neighbors are doing, so we have compiled from various sources as much as the censor will permit of the present shipbuilding situation in Europe. These notes on shipbuilding, together with some observations on the progress in design of ship structure and the advancement in propulsion machinery are arranged by country of origin for the convenience of the reader.

Great Britain

When war was declared in 1939, the British Admiralty immediate-

ly began a strenuous naval building program and by 1941 practically 80 per cent of the entire shipbuilding capacity of the nation was engaged in building naval craft. The remaining 30 per cent in 1941 turned out over 1,500,000 tons of merchant shipping, mostly in modern steam- and motorships of about 10,000 dwt capacity, running around 12 knots sea speed. Practically all of the steamers are built with the idea of using coal for fuel. All of these ships are being built with ample provision for handling cargo and with firstclass, modern accommodations for the crew.

We reproduce from "The Engineer" deck plans and inboard profile of a motorship built by the Burntisland Shipbuilding Company, Ltd. This vessel is of 10,200 tons deadweight carrying capacity, and is driven by a direct-connected, three-cylinder, two-stroke Doxford oil engine of the opposed-piston type. This engine generates

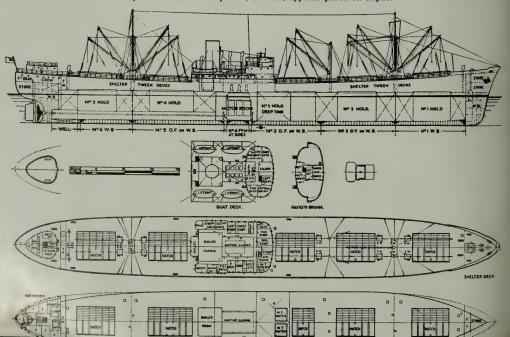
2500 shp at 108 rpm and drives the ship at 12 knots sea speed. Exhaust gas- and/or oil-fired boilers provide steam for auxiliaries, all of which are steam driven.

The hull is 425 feet long, 57 feet beam, 7000 gross tonnage, 5710 net tonnage, and 578,000 cubic feet grain capacity.

The yards are under the handicap of drastic blackout and work one 10-hour shift. On this basis, the standard 10,000-ton dwc ships, similar to our Liberty vessel, are being built from keel laying to delivery in around 100 days, and 14,000-ton tankers in from six to eight months. On the standardized ships, considerable prefabrication is done at steel shops in the interior.

These ships cost approximately \$90.00 per deadweight ton. There is, of course, a higher proportion of skilled shipyard craftsmen in the British yards than in the American yards. However, the yards engaged in merchant ship

A 10,200-DWT MOTOR CARGO SHIP of 12 knots speed built in Great Britain. The vessel is 425 ft. long, 57-ft. beam, and powered with one 3-cylinder, 2-stroke, opposed piston oil engine.



work have had to increase their man power tremendorsly, and a very considerable effort has been made to put over intensive training schemes to improve the skill of the new men taken on. Women are taking these training courses and finding useful occupation in some of the yards. Great Britain has a scheme of universal labor conscription, which registers every individual in the population and puts each individual to work in that occupation to which he or she seems best suited.

An interesting feature of the lalifer conditions under this scheme is the hot meal service. Every shift has the opportunity to get at yard or factory canteens, or cafeterias, a good square, well-balanced hot meal at a very low price. The universal testimony is that these hot meals are largely responsible for maintaining a high standard of morale and physical well being among the workers.

The use of arc welding is increasing but has not yet reached the extent to which that process is utilized in the United States'

We do not have the full figures for the production of merchant tonnage in Great Britain for the calendar year 1942, but in July last year it was running well ahead of the 1941 figure and would probably reach a total somewhere between 1,750,000 and 2,000,000 tons.

A broadcast from a British source says of these ships:

Scores of new tankers, large and fast refrigerated cargo vessels, and general cargo carriers of several sizes are already in service—a triumphant vindication of the policy

of the British Adorrally not to adopt one standard type of mer chant ship bore to use a number of types developed before the war for different trades.

Britain's standard ships are a very great advance on their predecessors of 25 years ago. Indeed, in many respects they are better than those launched just before the war. Besides possessing twice the capacity of the 1939 vessels in handling cargo, today's ships, whether steam or diesel driven, have a higher speed.

The new merchant fleet has practically every item which will be needed in peace time, a useful

indication of the official view on the result of the battle of the oceans. Accommodation has been improved beyond belief. The fo' c's'le has gone and the modern tramp has specially designed deck houses for its petty officers, sea men and firemen. Here they sleep in cabins with two berths, ward robes and mirrors, and have use of modern batthrooms. They have their meals in separate small messes.

Even passenger accommodation, which will be needed when peace comes, has not been forgotten, and it has been done as artistically as if there was not a U boat under the ocean.

WELDED SHIP REFUSES TO SINK

HE ACCOMPANYing illustration, provided by courtesy of The Lincoln Electric Company of Cleveland, world's largest manufacturer of arc welding equipment, is another testimonial to arc welding in ship construction.

This is a photo of the 12,500-ton tanker Victoria, which was torpedoed twice on her trip from Argentina to New York last spring, but managed to complete the voyage

Displaying the neutral flag of Argentina, this tanker, laden with linseed oil, was 300 miles off Cape Hatteras when a torpedo hit her 30 feet aft amidships. Although the deck plate buckled, her all-welded hull stood, and the bulkheads and tanks were unbreached. Captain Felix G. D. Salomone, the master, proceeded, but fifty min-

utes later another torpedo smashed into portside. The Captain and 39 of the unburt crew pulled off, but were embarrassed two nights and a day later when a U. S. warship picked them up and informed them that the torpedoed vessel was still alloat.

The ship arrived at New York Harbor under her own power and was laid up for repairs, but she is on the go again.

The Lincoln are welding equipment and welding rod were used by Cargill, Incorporated of Albany, New York, to construct the vessel. Welded construction was responsible for keeping the tanks and the bulkheading from breaking open. Are welding in ship construction is not only making hull structures sturdier, but is enabling shipbuilders and manufacturers to greatly speed up construction.

ALL-WELDED CONSTRUCTION was responsible for tanker Victoria remaining afloat after being torpedoed twice within an hour.

Other courtess of Lincoln Electric Co.



Mews PACIFIC NORTHWEST

by R. H. Calkins

Sprinklers for the Docks

Engineers for Seattle dock companies are busy preparing plans for installation of sprinkler systems, as required by the recently passed Seattle ordinance, according to Building Superintendent Charles C. Hughes. The installation deadline is April 2, but it is doubtful if the firms will be able to complete their projects by that time. Many have asked for priorities on the necessary materials, but none have been granted.

Hughes said that the city also had been delayed in getting started on the change at its two piers, but he expected bids would be ready for awarding contracts within the next two or three

weeks.

Capt. W. H. Munter, district Coast Guard officer, Seattle, announces that all members of the Puget Sound Pilots' Association, Columbia River Pilots' Association, and Columbia River Bar Pilots have received commissions in the Coast Guard Temporary Reserve.

"Pilotage will continue as before," Captain Munter said. "While actually piloting a vessel, the pilot still is acting as a state pilot, rather than a Coast Guard officer.

Army and Navy Award

High officers of the Army and Navy were there, along with civil dignitaries, but it remained for a workman in overalls to "steal the show" February 6 at the presentation of the Army-Navy "E" Award to the Western Gear Works. He was Harvey F. Johnson who, with Dorothy A. Thom, had been chosen to receive token "E" pins from Brig. Gen. Eley P. Denson, commanding the Seattle Port of Embarkation.

Mr. Johnson had not been scheduled to make a speech of acceptance, but his heart was so full that he just had to speak, and his few simple words proved to be the real climax of the ceremony.

"I'm extremely proud to have been chosen to represent the finest group of men that ever worked for any employer," he told the general. "And I pledge them all to do better than their best to win an additional star every six months. You can be sure, general, that the boys over here will do their best for the boys over there."

Capt. Samuel P. Ginder, commandant of the Seattle Air Control Center, and the Naval Air Station, presented the "E" burgee to Philip L. Bannan Sr., founder and president of the company, who came to Seattle from San Francisco for the occasion. Mr. Bannan immediately turned it over to his eldest son, Thomas J. Bannan, executive vice president and general manager, with instructions to keep it flying until the war is won.

Log Raft from Alaska

A Seattle tug has arrived at Anacortes, Wash., after a 900-mile towing feat from Edna Bay, northwest of Juneau, Alaska, with a raft containing 912,810 board feet of spruce logs.

The raft also contained 49,300 board feet of hemlock for experimental purposes.

The tug was under command of Capt. Carl Carlson, veteran of the towing fleets, and carried a crew of seven men. The two-week trip repeatedly was interrupted by gales during which the huge log raft was anchored in sheltered coves.



WESTERN GEAR WORKS . . . honored by Army-Navy "E" award. Principals at ceremony, left to right: Capt. Samuel P. Ginder, commanding officer of Sand Point Naval Air Station; Brig.-Gen. Ely P. Denson, commanding general, Seattle Port of Embarkation; Philip L. Bannan, Sr., of San Francisco, president of the firm; and his son, Thomas J. Bannan, Seattle, executive vice president and general manager of plant.

Coast Radio Buoys

Radio buoys, an invention of two Seattle officers of the Coast and Geodetic Survey, are being established in various parts of Puget Sound. The buoys will broadcast continuously and automatically the velocity and direction of currents. They are of pontoon shape, painted yellow, and have radio masts and underwater current meters. At night they show fixed white lights, visible one mile. The first of the buoys have been established between Bush and Nodule Points on Puget Sound.

Comdr John H. Peters and Lieut. Comdr. Elliott B. Roberts of the Coast and Geodetic Survey, developed the radio buoy. A radio



MINE SWEEPER SALUTE, launched on February 6 at the Winslow Marine Railway and Shipbuilding Company, was sponsored by Patricia Lindgren, 11-year old daughter of Arthur H. Lindgren, asistant general manager of the yard.

station at Magnolia Park, Magnolia Avenue and West Garfield Street, was used in the early experiments, and a Seattle firm constructed the instruments.

Destroyer Launched

Christened by Mrs. Eugene B. McKinney of Sacramento, Calif., the United States Navy destroyer Haggard was launched from the Seattle-Plant of the Seattle-Tacoma Shipbuilding Corporation, February 9. The Haggard is the twelfth destroyer sent down the ways from this plant, and the second of the 2,100-ton type, the first ten being of the 1,700-ton class

The new destroyer is named for a Captain Haggard, who distinguished himself on August 19, 1800, while commander of the private armed ship Louisa in action against French and Spanish privateers and gunboats off Tarifa, Spain.

Women at Lake Washington

At the Lake Washington Ship-yards, more than 175 women work as sheet-metal helpers, scalers, sheet-metal welders and electrical apprentices. Many of the women have sons, husbands or fathers in the armed forces. More will be taking part in the war effort when they complete their training for jobs in the big plant. They are being prepared for vital war jobs at a vocational school at Kirkland,

Wish per tod by the United States Office of Education. It is a busy place of the five 24 hears a day. Welding, burning, and sheetmetal pre-employment training classes are held around the clock

Shipbuilding for U. S. Army

Thirty shipyards in the Pacific Northwest are at work on the construction of tugs, barges, cargo vessels and general utility boats for the Army, according to Capt. Clarke B. Lake, chief of the contracts branch, Procurement Zone No. 5, northern office of the Transportation Corps, U. S. A., with headquarters in Seattle.

The yards with contracts for Army tugs include Barbee Plant No. 2, which is situated on Lake Washington at Bryn Mawr. This new plant is a part of Barbee Marine Yards, Inc., of Seattle. The yard is on a new site and started from "scratch."

E. P. Donnelly is president of Barbee Marine Yards, Inc.; Edward D. White, who was head of the Lakewood Boat Company of Seattle, is superintendent of Plant No. 2. The vessels were designed by L. H. Coolidge, veteran naval architect. Other yards in the Pacific Northwest that have contracts for Army tugs include the Grays Harbor Shipbuilding Corporation, Aberdeen, Wash.; Puget Sound Boat Building Company, Tacoma: Sagstad Shipvards, Seattle: Northwestern Shipbuilding Company, Bellingham.

Shipyard Briefs

The Oregon Shipbuilding Corporation on February 13 launched its 135th Liberty ship, naming the vessel after a veteran Columbia River man, the late Capt. Arthur H. Riggs, who founded the Veteran Steamboatmen's Association 17 years ago. Captain Riggs was master of the organization, which, before the war, held annual reunions at Champoeg Park, Ore gon. Its members were listed as officers of a'mythical ship and a mythical steamship operating company. Old-timers of the Puget Sound region attended the re-



SEEKS MEN FOR MERCHANT SHIPS...
Capt. Roy C. Donnally, formerly manager of U. S. Employment Service for the
State of California at Sacramento, is
now port representative of the Recruitment and Manning Organization of WSA
in Seattle. He is a graduate of the New
York State nautical schoolship St. Marys.



ERIK A. JENSEN . . . now manager of the Seattle agency of the Danish East Asiatic Company, succeeding M. Bildsoe, who has been transferred to San Francisco to be connected with the central administration of the corporation.

The Olson & Winge Marine Works on the Lake Washington Ship Canal, has launched its fourth 50-foot Coast Guard patrol boat. Three of the vessels were sent down the ways in January. The plant also has launched three 110-foot barges for the Navy. Nine more barges are under contract.

Contracts for a number of 110foot wooden harbor fire tugs have (Page 74, Please)

Mews PACIFIC SOUTHWEST

by K. M. Walker

Heavy Gale Strikes San Diego

The night of January 22, a strong southeast wind commenced to howl up the Southern California coast as night fell and boat owners and crews, shipyard gangs and dock men were hastily engaged in running out heavy mooring lines, rigging fenders and moving boats into the lee of docks and piers to snug them down for a night of heavy weather. By ten that night, it was generally thought that everything was secure and the vessels could safely ride out anything that might be expected in the way of weather. Some of the crews left their boats and went home feeling their boats were riding well and there was nothing to fear.

By midnight a steady forty-mile wind was blowing and some of the boats in the more exposed locations were jumping rather wildly. Boat crews were called from their homes, but it was then too late, as the wind suddenly increased to near hurricane force with gusts reported to be as high as seventy miles or more an hour. The accompanying seas rose to heights never seen before in this usually quiet bay, and the whole scene was one of utter confusion. The heavy steel pontoon pipe line of one of the dredges operating in the lower bay was ripped away from the dredge and its anchorages and, breaking up into seventy- and hundred-foot sections, went charging up the bay. Diving and rearing as they went each pontoon section, weighing several tons, was an uncontrollable menace to everything and piers, tearing out pilings when

they hit, then gnawed away the rest of the night at the broken structure. Some fouled the moorings of hapless small fishing boats and yachts, dragging the boats onto the beach where the heavy pontoons smashed them into kindling wood.

One of the Navy mine sweepers got away from the San Diego Marine Construction Company and milled around in their basin for a time before it found its way out. Galloping free and wild up the bay, it struck the Kelp Barge Elwood at the old McCormick Pier, setting her adrift and then went on to fetch up in Spanish Bight on North Island across a new Navy landing ramp where she smashed both her own keel and the ramp. Meanwhile the Elwood romped across to the Van Camp Sea Food Company plant where she crashed into the Betty L. and fetched up against the old Jap wharf. The Betty L promptly gave up the ghost and settled out of sight.

By 2 A.M. Saturday, January 23, the wind commenced to abate and with the approach of daylight the bay was again calm, but sunrise saw a shore line strewn with wreckage all the way from Point Loma to National City. Most of the boats swamped and sunk or on the beach were small and had been left at moorings. The larger boats were moored at docks and along the Embarcadero, but a number of these had gotten adrift and crashed into other vessels. Practically all the boats moored at the docks had bulwarks and guards smashed off on one side. Some were damaged on both sides where other boats had crashed into them. The

new tuna boat Sunset had her stern crushed in and both sides damaged. The big "Glory of the Seas" had gone on a rampage and taken her own starboard side out by crashing into a whole line of boats at the Campbell dock and the General Petroleum dock, where she had gone along like a hog scratching on a rail fence, stopping to have a good rub against each boat and erase their guards and bulwarks. One of the humorous sights on that wild night for the little Buenaventura, which had been safely moored in the lee of one of the finger piers at the Campbell Machine Company but with her anchor hanging over her nose in a roller outrigger. As the seas rose the anchor commenced to swing until it was going around in complete circles like a man might swing a watch charm on a chain. With each complete swing, it would strike the wooden stem or the planking on either side, stop and start around the other way. After about two hours of this a particularly heavy sea came along and the anchor swung up, fouled in the headstay and fell heavily on deck. The nose of the Buenaventura was a sorry looking sight after this bout of shadow boxing.

This gale seemed to have struck most heavily at San Diego, bounced lightly off Newport and Balboa, churned things up a bit at San Pedro, Long Beach and Wilmington and taken a last good punch at Santa Monica, where several boats were sunk or thrown on the beach. The weather bureau reports it as the heaviest gale in the history of San Diego.

(Page 77, Please)



FROM CALSHIP'S WAYS

CALIFORNIA SHIPBUILDING CORPORATION, the worldrecord-breaking shipyard on Terminal Island, Los Angeles Harbor, had the honor on February 15 of launching the officially-designated 1000th ship in the Maritime Commission construction program. This hull was christened Edward Livingston by Miss Barbara Vickery, the daughter of Read Admiral Howard L. Vickery, Vice Chairman of the Maritime Commission.

CALSHIP currently maintains its leading position by delivering 14 ships, laying keels for 14 ships, and launching 14 ships, all in the 28-day month of February. Every other day a big 10,000-ton ship leaves this great yard to be loaded with munitions for the far-flung fronts of this global war.

S. S. EDWARD LIVINGSTON (above) slides down the ways as a symbol of what American shipbuilders have been able to accomplish in relatively short time under the urgency of war.

MISS BARBARA VICKERY (center) smashes the beribboned bottle of champagne across the ship's bow, as her mother, Mrs. Howard L. Vickery, matron of honor, looks on. Terence Lee was aide to the sponsor.

THE LAUNCHING PARTY (bottom, left to right): John A. McCone, executive vice-president of Calship; Mrs. Howard L. Vickery; Captain Schuyler F. Heim, commandant of the Naval Operating Base, San Pedro, California; Miss Barbara Vickery; Carl W. Flesher, Regional Director, Construction Division of the Pacific Coast, U. S. M. C.; Terence Lee, aide to the sponsor, Calship; and Mrs. J. M. Warfield, wife of the administrative manager, Calship.



Northwest News

(Continued from page 71)

been awarded to the Everett Marine Ways by the Government. The vessels will be powered with diesel engines. Contracts for wooden sub-chasers have been awarded to yards in Bellingham, Tacoma and Astoria.

Three men active in the ship-building industry in the Pacific Northwest have purchased the tide lands in Tacoma on which the Ernest Dodge Company is situated. They are J. M. Martinac, of the plant of that name; Arne Strom, of the Tacoma Boat Building Company; and Reuben Carlson, attorney for shipbuilding companies.

The ninth all-steel welded Army tug built by the **Reliable Welding Works** of Olympia, was launched February 12. The 54-foot vessel was christened by **Mrs. J. T. Trullinger**, wife of Olympia's mayor.

For expansion of the Seattle-Tacoma Shipbuilding Corporation's plant in Tacoma, 50 more acres of Tacoma tideflats were taken over by the Navy, February 12. An order of possession was filed by the Government in Superior Court in Tacoma. The land will be utilized to expand the Tacoma Division of the Seattle-Tacoma Shipbuilding Corporation.



MICHAEL E. KATONA, secretary of Puget Sound Pilots, and the Washington State Board of Pilotage Commissioners, has been commissioned a lieutenant (j. g.) in the Coast Guard Temporary Reserve. He will continue in charge of pilot headquarters in Seattle.

"Killer" Boats to Coast Guard

Five of the little ships of the American Pacific Whaling Company, known as "killer" boats, are being placed in an undisclosed service. The five vessels and the whaling base at Bellevue, Wash, on the east shore of Lake Washington, were taken over by the Coast Guard in August of last year. The whaling company's wharf and moorings at Bellevue were converted into a Coast Guard base. Under the plans, the whalers will operate under charter to the Government.

Mine Sweepers

Steel and wooden mine sweepers were launched from Puget Sound shipyards February 6. The first vessel of a series of eight steel 180-foot mine sweepers was sent down the ways from the plant of the Winslow Marine Railway & Shipbuilding Company. The vessel was christened the Salute by Patricia Lindgren, 11-year-old daughter of Arthur H. Lindgren, assistant general manager of the yard. The Winslow plant has built four steel 220-foot mine sweepers. They are the Pursuit, Requisite, Sage and Right.

The wooden mine sweeper YMS-245 was launched from the yards of the Tacoma Boat Building Company. Eleven-year-old Marion Ione Hopkins, daughter of a leadman carpenter, christened the vessel.

Patrol Boats

Four 50-foot Coast Guard patrol boats were launched early in February from the yards of the Jensen Motorboat Corporation in Seattle. The vessels were sponsored by Mrs. Bessie Jensen, wife of Tony Jensen, owner of the yard.

British Mine Sweepers

When Mary Maureen Johnson, daughter of Murray V. Johnson, assistant to the general manager of Associated Shipbuilders, broke the christening bottle of wine on the prow of the steel mine sweep-



U.S.S. HAGGARD, 12th destroyer down the ways of the Harbor Island plant of the Seattle-Tacoma Shipbuilding Corporation, was launched on February 9.

er Cynthia, January 25, the 11year-old Seattle girl broke into tears. Her mother standing nearby, asked why she was crying.

"I don't know," the little girl sobbed. "I guess it's because I'm so happy."

The Cynthia, building for the British Navy, was launched in a snowstorm. The vessel was followed into the water by a sister ship, the Elfreda, also building for the British Navy, which was represented at the launching by Lieut. Comdr. H. R. Shaw and Lieut. D. Alex Pask, both of the Royal Navy Volunteer Reserve.

Personal Gleanings

Lieut-Comdr. Donald T. Adams. United States Coast Guard, has been transferred to the Atlantic for sea duty, after serving as Captain of the Port and Port Security officer in Seattle. Lieut.-Comdr. Julius B. Calkins has succeeded Comdr. Adams as Captain of the Port, and Lieut.-Comdr. John W. Malen is now Port Security Officer. . . . Col. Thomas J. Weed, superintendent of Army Transport Service in Seattle, has been advanced to Deputy Port Commander of the Seattle Port of Embarkation. Lieut.-Col. J. A. Barthrop, assistant superintendent of the A.T.S. in Seattle, who is a

(Page 77, Please)



by "The Chief"

"The Chief's" department welcomes questions-Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

VIII-Electric Propulsion Equipment (cont.)

Shaft Bearings

The two turbine shaft bearings are self-aligned, ball-seated, and babbittlined. Each is split horizontally to facilitate assembly and dis-assembly. and each is clamped to its seat by its bearing cap. The bearing-lining halves are not interchangeable with those of another bearing

Oil is supplied to the bearings from the ship's gravity system, as indicated in Fig. 16. The babitt at the horizontal joints of the bearings is relieved for the entrance of the oil. The oil is drawn around the shaft by its own pumping action in the direction of rotation, maintaining an oil film around the shaft journal. The oil passes out through holes at the bottom of grooves located at the ends of the bearings.

The dimensions shown in Fig. 20 should be observed when machining a rehabbitted low-pressure bearing. The bearing at the high-pressure end must not be rebabbitted.

Thrust Bearing

The thrust of the turbine-generator rotor in both directions is absorbed by a thrust bearing immediately adjacent to the shaft bearing at the high-pres-

(2) and (10), Fig. 9, rotating adjacent to the stationary thrust rings (3) and (6). The thrust rings are provided with clearance at the shaft and have babbitted faces that are grooved for distributing oil over the thrust surfaces

Rotation of the thrust rings is prevented by the pins (4) and (8). The running clearance between the collars (2) and (10), and also the axial locameans of the shims (5) and (7). The

thrust collars are keyed to the shaft, and the larger one is held against its locating shoulder by the nuts (11)

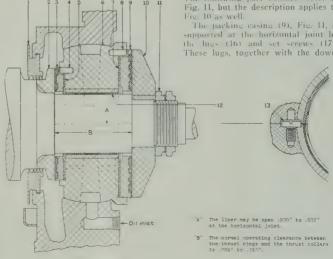
During manufacture, the shim (7) is ground to obtain .005 to .010 in, clearance between the thrust ring (9) and (3) is against its thrust collar (2). The shim (5) is then ground to the thickness required to hold ring (3) against its thrust collar when the proper clearance is obtained between the nozzle plate and the first-stage bucket wheel

Turbine Shaft Packing

Labyrinth-type shaft packing is provided at openings where the shaft passagainst the leakage of steam to atmosphere and of air into the turbine. Both the low-pressure and high-pressure packings consist of several grooved metallic rings which are held away from the shaft with a small clearance by shoulders, as shown in Figs. 10 and 11. The packing rings at the high-pressure end of the turbine are of the stepped-tooth construction while the teeth at the low-pressure end are all of equal length.

The packing at the low-pressure end of the shaft is shown in Fig. 10, and the high-pressure packing in Fig. 11. The following part numbers refer to Fig. 11, but the description applies to

The packing casing (9), Fig. 11, is supported at the horizontal joint by the lugs (16) and set screws (17) These lugs, together with the dowel



- Pin Thrust ring, active Thrust collar
 - aring liner

MARCH . 1943

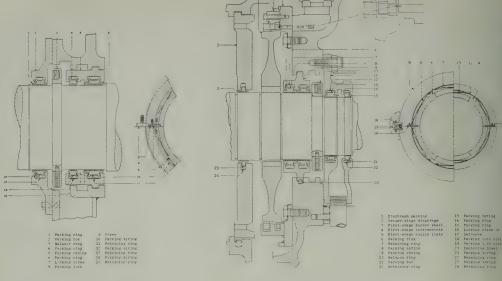


Fig. 10. Shaft Packing at L-p End of Turbine

Fig. 11. Shaft Packing at H-p End of Turbine

(20), guide and center the casing and hence the packing rings with reference to the shaft.

Each packing ring consists of six segments with machine-surfaced ends that butt together when the ring is assembled, and six springs (8-13), that hold the ring against the shoulder. The six springs are held in their proper position by means of a spring-retaining ring (7-12) that is in halves and has lugs for locating the springs. Both the packing ring and the spring retaining ring are prevented from rotating with the shaft by means of stop plates (18-19) located in the upper half of the packing box at the horizontal joint.

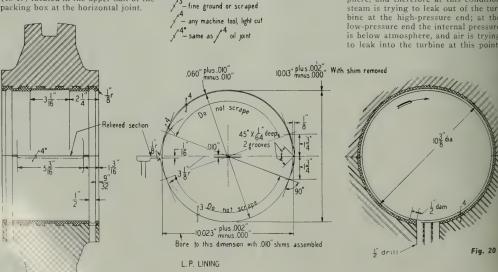
When the packing is first assembled, the initial clearance between the ring and the surface of the shaft is approximately 0.010 in. The actual clearance is produced by the subsequent running conditions. The rings shipped in the turbine have been worn in at the factory when testing the turbine.

The packings at each end of the turbine are piped together in a system that provides means for disposing of steam that leaks past the packing

FINISHED SURFACES

MACHINING

rings, and also for supplying sealing steam to prevent leakage of air into the turbine. A line diagram of the steam-sealing system is shown in Fig. 15. Since the turbine is a condensing unit, a vacuum will exist in the turbine shell during periods of starting and stopping, and at any other time when the turbine is operating at low load; it is during such time that sealing steam is required to prevent air leaking into the turbine. When operating at normal full load, however, the turbine internal pressure at the high-pressure end is considerably above atmosphere, and therefore at this condition steam is trying to leak out of the turbine at the high-pressure end; at the low-pressure end the internal pressure is below atmosphere, and air is trying to leak into the turbine at this point



GENERAL INSTRUCTIONS

BEFORE REBABBITTING, INSPECT CONDITION OF TINNED SURFACES,
AS SURFACES WHICH CONTACT BABBITT METAL SHOULD BE WELL TINNED.
WHILE PARTS ARE HOT FROM MELTING OUT OLD BABBITT,

In order to proved automatically for a " in the scaling conditions that exist to sweet no local and full load openation is searched and full load openation is searched and regulator. In Table 18 were led in the system, this regulator is a "tains a pressure of about two-points" are at each if the packings.

Diaphragms and Packing

The diaphragus in the turbine are supported at the horizontal center limbar extreme, lugs, as shown in Fig. 12. A small rush pins, centering dowels, and level are used to keep the upper and lower halves of the diaphragus properly aligned. The diaphragus are presented from rotating with the shart by means of the centering lugs mentioned above.

The diaphragm shaft-packing ring is similar to that employed at the high-pressure and low-pressure ends of the turbine. Six packing segments comprise the packing ring, each segment being held against the shoulder in the diaphragm by a spring. Retaining rings support and position the springs. The inner end of the diaphragm key rests in a notch in the packing ring and prevents the rings turning with the shaft "The Chief":

In the column entitled "Your Problems Answered," by "The Chief," I believe I discovered a mistake.

The area of a piston (circle) is equal to $\frac{\pi}{4}$ times diameter squared. Numerically thus: Area .7854 \times d², not Area .7854 \times d.

Sincerely, P. R. S., New York, Answer

Thank you for calling us on an obvious mistake of omitting the square on the d for diameter, and write in again, please.

"The Chief."

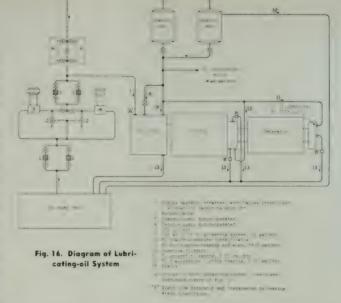
Pacific Southwest News (Continued from page 73) Navy Acquires Concrete Tankers

For the first time in the history of the United States Navy a fleet of concrete will soon be at sea. It is quite doubtful if the Navy will ever adopt this material for airplane carriers or battle wagons, but they have thought well enough of the concrete oil tank barges being built at the Concrete Ship Constructors to take over six of these bulky vessels.

Tuna Fishing a National Problem

The new rationing and manpower regulations are working a hardship on the tuna boat operators with the result that the very necessary production of sea food supplies is being badly hampered.

"The tuna fleet is confronted



with a serious crisis in obtaining sufficient canned stores and fresh meat for tuna boats operating on voyages lasting from four to eight weeks," says Charles A. Landers, president of the American Fishermen's Tuna Boat Association of San Diego.

"Every day that a boat is forced to remain in port to obtain supplies means the loss of many tons of fish to the nation's food supply. In addition to the rationing problems, some of the boats already are operating with less than normal crews. Most of the younger men have entered the armed forces, and it is impossible to replace them with sufficient skilled fishermen to send all the available boats to sea with full crews."

During the latter half of 1942, fish were unusually plentiful and for the first time in many years large schools of albacore were found off Point Loma. With the approach of winter, these disappeared but are now in a recordbreaking run off the Lower California coast and most plentiful off San Martin Island where many boats are fishing. It is expected that, with the arrival of warmer weather the schools will run again during 1943 off Point Loma. This is fortunate for the fishermen and canneries, as most of the longrange tuna boats have been taken by the Navy.

Pacific Northwest News

(Continued from page 74)

former official of the McCormick Steamship Company, has been advanced to superintendent, succeeding Colonel Weed. . . . Lieut .-Col. D. R. Girdwood, who visited North Africa six years ago while president of the Girdwood Shipping Company, is in Casablanca where he was a member of the first landing party. Colonel Girdwood joined the Army Transport Service in July, 1942, as a major. Erik Jensen, who formerly was connected with the Danish East Asiatic Company in San Francisco and New York, has taken over the duties of manager of the company's Seattle offices and has been acting Danish consul in Seattle. He succeeds M. Bildsoe, vice president of the company and manager of the Seattle offices for the past 22 years, who has been transferred to San Francisco. . . . Albert V. Moore of New York, president of the Moore-McCormack Lines, Inc., spent three days on Puget Sound early in February in conferences with C. J. Gravesen, manager of the company in Seattle, representatives in Tacoma and Olympia, and officials of the Port of Seattle Commission. . . .



Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A DEPARTMENT FOR DECK OFFICERS

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Nitrate Charters

QUESTION

Dear Skipper:

At the conclusion of my present voyage, my ship is to go on a charter, or rather a time charter, for a nitrate sales corporation. It will undoubtedly be a charter covering one or more voyages from the coast of Chile to a port or ports named by the charterer. Can you tell me anything about the pitfalls of this type of charter, and the nature and actions of nitrate as a cargo to carry? I find all cargo books omitting mention of this cargo entirely, or classing it as a hazardous cargo, and stopping there. Why is it hazardous, and how best is it handled?

Thanking you in advance for your information, and letting you know we are constant readers of your articles, I am,

Yours truly, H. L. M.

ANSWER

There are hundreds of ships that have been on the "nitrate run" on a time charter basis through the years, and yet we have never met anyone that was ever on that run other than those we met while dome a ourselves. This is primarily due at the fact that before the

start of the present war most of these charters were made with foreign bottoms, which were available at rates unattractive to American operators.

With the advent of the Neutrality Act many foreign ports were closed to American ships. Vessels of foreign registry eagerly moved in on the routes abandoned by the American vessels, thereby deserting their former Chilean nitrate trade. The charterers were forced to raise their rates sufficiently high to be attractive to vessels of American registry.

The charter party will tell you the time and place of going on hire, which will be the official time of the commencement of charter. Oil consumption is charged to the charterer's account from that moment on, so observe and record it accurately. A definite point or line is usually established for this purpose, such as abreast of the light vessel at the port of departure.

The charterers are experts at their business, having had hundreds of vessels of all rigs and nationalities on hire through the years. They will pay honestly for every minute of the time that you are on hire, but will deduct for every moment of delay during the charter period. To earn your charter hire you have to be either en route to a given port, or handling their cargo under their direction.

Charter Deadweight

When you read your charter, you will find that your owners and the charterer have made up a charter that takes the total deadweight of your vessel into consideration, and that this is the builder's deadweight more often than not, with no allowances made for additions or alterations made in your vessel since she was launched. Be sure to check that point carefully before you start.

From this deadweight you will be allowed some ridiculous figure, such as 50 tons, for stores, water, and boiler feed water. The oil you will carry will be provided by the charterer, and the amount you are to have on board for each passage will also be determined by him. If you insist on more than his recommended amount of oil, you will not be able to carry the amount of nitrate he is entitled to expect from his charter and your vessel will be charged accordingly.

It is well therefore to get rid of your surplus dunnage before you leave your last American port. There you can turn it over to an

agent and receive credit for it on your vessel's account, for of course it will have to be replaced after you return to your normal trade If you carry it with you, your deadweight will suffer accordingly, and the charge against your owners in the two or three trips will probably be greatly in excess of the value of the dunnage It would be wise, however, to keep dunnage stowed in the carpenter shop, or some such place, where it will be safe from pilferage and vet available when you want it, to soften up some of the port officials that you will meet. A few clean boards will accomplish far more for you in Chile than all the broken Spanish your entire ship's company can muster.

Sanitary Facilities

It is necessary for you to provide toilet facilities for the nitrate trimmers that will be aboard your ship, and for the crews of the lighters that come alongside. It is best for all concerned if you build an outrigged house of dunnage over the stern, enclosed in canvas or burlap for this purpose. It may be lashed up with rope varns that can be cut adrift after you sail, and a fresh one built each time you return to Chile. It will then be unnecessary for these transients to go near or through any cabins or crew's quarters on the ship.

Before you leave on your first voyage, the charterer will provide you with bales of burlap and bundles of lath sufficient to line your bilge covers, iron stanchions, and exposed metal about the holds. He will also give you a letter of instructions which is the result of his accumulated experiences with many ships, and, as far as possible, we recommend that you follow it exactly.

Nitrate in Bulk

There are two forms of nitrate commonly shipped in bulk. One is widely known as salt peter and is much like coarse Epsom salts in appearance, is very hygroscopic in nature, and will crust quickly, often overnight, from just the slight dampness of the Chilean dew. The other has been processed

and is made up of separate particles of many and varied sizes from infinitesimal to a maximum of one eighth inch in daineter. Each particle is a round bubble, with a hole where the bubble was formed and actually filled with air.

When nitrate is mentioned as a free flowing commodity, it is these little bubbles that are referred to. They will find the smallest crack in your ceiling and flow through it until they have filled the bilges completely. They will run from the slightest vibration, jar or roll of the ship, almost as freely as water.

It is because of this free flowing feature that it is so necessary to fill all cracks with strips of burlap, or oakum if available, using a calking tool to drive it home. It is not advisable to board over cracks unless a solid, even floor is laid, for in discharging, all boards would be ripped off with the shovels. This is also true of the lath, which should only be used over the turn of the lath.

This free flowing variety will also crust over, and once it has settled and this crust formed, it will will cause you no trouble for the balance of the voyage.

When nitrate is loaded, barges are brought alongside, each of which holds about 50 tons. It will be loaded at the rate of one barge every forty minutes, for the shovelers are paid piece work, and with time out for shifting barges, you should average better than 50 tons per hatch or gang hour.

Stability and Trim

With the stability and trim of your vessel in mind, it will be necessary for you to decide how much nitrate you will load in each hatch in advance, so that the lighters may be loaded accordingly. In many ports, it seems impossible to switch a lighter from number one to number five hatch without the lighter going to the beach first. This trip to the beach is necessary to get permission to load in the other fellow's hatch, for hatches are assigned in a seniority system of their own understanding.

When sufficient weight has been loaded in your lower holds, it

shall be necessary to come up in the 'tweendeck with the balance; roughly one-third of your deadweight. To do this put on the 'tweendeck hatches and cover them with burkap. Put two thick nesses of burlap, one fore and aft, and the other athwartships tack ing them at the corners and along the sides of the hatch if it appears necessary.

There is always the possibility that the charterer will want to load the untreated nitrate in the lower hold and finish off the 'tween decks with the refined nitrate. This is almost sure to be the case if you finish off in Tocopilla. Do not let anyone talk you into using a good tarpaulin, or any tarpaulin that you value, to cover your 'tweendeck hatches as a separation, for the tarpaulin will be ruined at the first discharging port with the shovels and picks used to handle the nitrate. Burlap will do the job to the satisfaction of all concerned.

Nitrate is considered hazardous because it is used in the manufacture of gunpowder. It burns with great rapidity once ignited, and spreads instantly. It is readily soluble in water, and water alone will extinguish it. Nitrate will not readily ignite as from a match, while a cigarette butt will heat it and then start a fire, so smoking should be forbidden while there is nitrate on the decks, or while the hatches are open.

It is a clean-smelling cargo, and a clean cargo to handle, though the processed nitrate gives off a fine dust while loading, and this dust covers the decks lightly like a flour. It can, however, be readily washed off with a hose. The nitrate cargo tends to drive any rats on board out of the holds, and it is advisable to set traps around storerooms and engine room runs, for they are nearly desperate when they come on deck with hunger and thirst

Port Procedure

Now a few words about the ports and the port procedure, and we will have covered the essential problems, and the rest you will

(Page 98, please)



On the Ways - SHIPS IN THE MAKING

Another New Hope

Salvatore Ventimiglia of Monterey, California, is a sturdy Pacific Coast fisherman. Late in 1941 he built a sturdy purse seine fishing boat and named her New Hope. She was taken over by the U. S. Navy and Salvatore was glad his boat was to be of help in the war. Being still full of hope, he began planning for another boat and has just recently secured full clearance with all necessary priorities.

Anderson & Christofani of San Francisco are building New Hope. She will be a sawed frame hull, 82' × 21' 6" × 10', and will be powered with a 240-hp model 35 F 10 Fairbanks Morse diesel.

\$1,000,000 Contract For Bellingham

A \$1,000,000 contract has been awarded the Bellingham Marine Railway and Boatbuilding Company, of Bellingham, Washington, for the construction of three subchasers of the PC type, according to A. W. Talbot, owner of the company.

The vessels are 136 feet in length and are of wood hull construction and similar in design to the mine sweepers, of which ten already have been launched.

Besides the mine sweepers, the company is building 187-foot salvage vessels and 165-foot rescue tugs—all for the Navy. Just recently the company received renewal of the coveted Navy "E" for excellence in industrial production.

Calship Overtakes Oregonship in Liberty Production

Increasing its lead over its nearest competitor during the month instended, California Shipbuilding Corporation remains the champion producer of ships in the world.

Here are the February production records:

Calship (Bechtel-McCone): 14 deliveries, 14 launchings, 14 keels laid.

Oregon (Kaiser): 10 deliveries, 13 launchings, 13 keels.

Totals to date:

Calship: 137 deliveries, 145 launchings, 159 keels.

Oregon: 136 deliveries, 142 launchings, 153 keels.

Both yards produce 10,500-ton Liberty ships for the U. S. Maritime Commission.

Navy Launchings

On March 3, the U.S.S. Pakana, a fleet tug, named for a small Indian tribe once living in Texas, slid down the ways at the United Engineering Company in Alameda. Sponsor of the vessel was Miss Louise Mary Shipp, daughter of Captain Earl Shipp, chief of staff of the Twelfth Naval District.

On March 4, another Naval auxiliary was launched when the U.S.S. Carter Hall slid down the ways at the Moore Dry Dock Company in Oakland. Sponsor of the vessel was Mrs. Thornton Wilson of Berkeley, wife of Major Thornton Wilson, U.S.M.C. (Ret.), legal aide to the Commandant of the Twelfth Naval District.

On March 6, the U.S.S.Astoria, named for one of three heavy cruisers sunk off the Savo Islands last August, was launched at the yards of the Cramp Shipbuilding Company.

Calship's "Voyages to Victory" Half Finished

Chipping almost 50 per cent from their daily average rate of absenteeism, the 241 men in the chipping and test crew of the Outfitting Department at the California Shipbuilding Corporation led at the half-way mark in a 60-day "Voyages to Victory" attendance drive.

A. O. Pegg, outfitting manager, and J. C. Lowry, chipping superintendent, complimented the leading crew as the high light in a noon yard show at the recordbreaking shipyard. Each of the half-way-mark winners was awarded a certificate of achievement.

It is hoped that the novel campaign, in which each of the 40,000 men and women of Calship is entered, will lower the absentee rate below the current 3 per cent mark.

Joint "E" Ceremony

The Zenith Dredge Company and the Marine Iron and Shipbuilding Company, Duluth, Minnesota, received the Army-Navy "E" pennant at a joint presentation, January 22, made by Vice Admiral R. R. Waesche of Washington, commandant of the U. S. Coast Guard.

Both companies received the production award for building Coast Guard cutters. Zenith Dredge has completed construction of seven of these cutters, and is now building tankers for the U. S. Navy.

19 Coasters Awarded

Contracts for construction of 19 coastal cargo vessels have been awarded to three firms located on the Gulf Coast, the Maritime Com

The firms given the contracts are Pennsylvania Shipyards, Inc., Beaumont. Texas, mine vessels; Avondale Marine Ways, New Orleans, Louisiana, six vessels; and Pendleton Shipyard Co., New Orleans, Louisiana, four vessels.

Fach ship is to be 258 feet long, with a beam of 42 feet. The contracts are on a price-minus basis, at a price of \$950,000 per vessel. All but three of the ships are to be delivered in [943.

WAYS and MEANS

ABSENTEEISM—"the big \$64 question of industry"—was discussed by L. A. Copeland, editor of "The Calship Log," as principal speaker before the Industrial Advertising Association of Southern California at a recent luncheon meeting. Due to effective campaigns of education, Calship, Copeland says, now has a relatively small percentage—three per cent of its 40,000 workers absent daily and expects further to reduce this figure.

MEATLESS TUESDAYS are being observed at the Federal Shipbuilding and Dry Dock Company Kearny and Port Newark (New Jersey) yards by a self-imposed restriction in the dining rooms, cafeterias and canteens of the yards. Substitutes for meat include eggs, fresh vegetables, omelets, apple fritters, French pancakes, macaroni and spaghetti.

TEN BEST SUGGESTIONS

--Marinship has suggestion boxes
posted throughout the yard and
hundreds of suggestions are submitted each month, from which a
committee picks what they believe
to be the ten best. Each of the ten
winners receive a \$25 War Bond.
Slogans are also requested, and a
recent winner, Carl White, offered
this, "A Jap is low, but a loafer is

REFLOATED — Tanker S.S. Schenectady, which has been in drydock over a month after breaking in half as it lay at anchor at an oufitting dock of the Swan Island yard of Kaiser Co., Inc., has been

MR. AND MRS. J. E. SCHMELTZER, at the launching of the S. S. Edmund Fanning, 135th Liberty ship to be launched at Calship, at which Mrs. Schmeltzer served as sponsor, February 8. Mr. Schmeltzer, director of the Division of **Emergency Ship** Construction of the U. S. M. C., died on February 24.





CORRECTION AND CHANGE OF ADDRESS... In our February issue, we published the above picture with the names listed in reverse order. The following is correct, left to right: W. W. Steiner, electrical engineer; R. L. Miller, Jr., hull and engineering; Thomas T. Lunde, mechanical engineer; and E. B. Capion, hull engineer. The company moved to larger quarters in February, due to increase in business, to 640 Mission Street, San Francisco. The organization furnishes competent advice and design service to smaller shipyards having no engineering department.

repaired and refloated according to an announcement on February 28 of R. K. Willis of WSA.

FIVE MORE BLAST FURNACES, to be in operation west of the Rockies by the end of the year, will take care of any "steel pinch," according to Irving S. Olds, chairman of the board of U. S. Steel Corp., who visited the Pacific Coast in February after visiting the new \$150,000,000, steel plant in Utah.

WAGES—The shipbuilding industry paid higher average wages than any other industry in November, the latest month for which figures are available, according to the Alexander Hamilton Institute. Average weekly earnings of employees in the shipbuilding industry amounted to 800.75

FIVE OF A KIND—On May 9, each of the famous Dionne quintuplets will christen one of five cargo ships for the Walter Butler Shipbuilders, Inc., Superior, Wis.

The invitation, sent by Secretary Hull, was accepted in view of the splendid contribution to the Allied cause these ships will make. Looks like this Wisconsin yard will be the "yard of the month" in May.

LOADING RECORD — Railway crane crew No. 112 in the Pinto Island yard of Alabama Dry Dock & Shipbuilding Co. is making extra trouble for the Axis, according to J. A. Odom, foreman of the steel yard, who disclosed that the crew loaded 535 tons of steel recently onto railroad cars in six straight hours. This was an average of ½ tons per minute.

TEN JOURNALISTS of Argentina are scheduled to visit Calship sometime in March, according to information received from Washington in February. At the invitation of the National Press Club, the group is making a tour of American war industries and military establishments.



ZENITH DREDGE CO., Shipbuilding Division, Duluth, Minn., gets "E" award. Spreading the pennant at the ceremonies are D. C. MacDonald, president of Zenith Dredge (at right); Stephen G. Rockwell, general manager of company (center); and John Kallas (left), the worker who regularly purchases the most War Bonds in the yard.



ABOVE: INTERNATIONAL GOOD WILL was demonstrated at Marinship on February 6 when the S. S. Sebastian Cermeno, named for the 16th Century Portuguese explorer, was launched. Representatives of Portugal, Brazil and Mexico, which figures in the life of the explorer, participated in the ceremonies. Left to right: F. Silva, Deputy Consul of Brazil; Col. Vicente Peralta, Consul of Mexico; Mrs. Bruce Vernon, the sponsor and wife of Marinship's assistant to the general manager and the man largely responsible for the design of the new yard; Dr. Euclides Goulart da Costa, Consul of Portugal; and Jose García, of the Mexican Consulate. The vessel was Marinship's eleventh Liberty ship.

BELOW: A THOUSAND UNIFORMED BOY SCOUTS, Cubs and Sea Scouts were special guests on Lincoln's Birthday at the launching of S. S. Peter Donahue at Marinship yard in Sausalito, the vessel being named for San Francisco's pioneer manufacturer and railroad builder. The ship's sponsor was Mrs. Thomas C. Nelson, an employee at the yard and mother of two Eagle Scouts, one of which is reported missing in action with the Navy.



WELDING GRAND-MOTHER, Mrs. Helma Thompson, of Richmond Shipyard No. 3, Richmond, Calif., helped to construct a huge C-4 cargo ship and then officiated as sponsor at its launching.

STYLE FOR SAFETY of women shipyard workers has been worked out by representatives of U.S.M.C. and the U.S. Navy. To be correct, milady will wear a bandana over her hair, covered with a large hard hat; coverall garment fitted close at the wrists and the ankles; and impact-resisting goggles with side shields and tinted lenses. There was no mention of proper perfumes or cosmetics,

GROUP INSURANCE for employees of shipyards with Maritime Commission contracts may soon be offered by the Commission, according to plans now under way in the Washington office. The plan will be known as the Maritime Commission Standard Plan of Contributory Group Insurance, and will be applicable to all shipyard workers which will allow workers earning less than \$1.25 an hour a life insurance coverage of \$1,000; those earning in excess of \$1.25, coverage of \$2,000. Health and accident benefits will also be included.

LIBERTY LADDERS—The National Youth Administration war work training schools throughout the nation have been assigned the job of building steel ladders for 167 Libertys.

HOUSE ORGAN-"Quarter-Deck" is a comparatively new publication put out by the St. Johns River Shipbuilding Company, Jacksonville, Florida, for its employees. Each issue averages 12 pages, 8½" x 11", and is printed in black and the very popular reddish-orange inks. The most impressive feature is that most of the personal photos show the men performing their duties, which in itself is a subtle method of educating the rest of the employees in how the other fellow works. This is especially true of the picture page "Men at Work." The main feature of each issue is a fullpage story of some superintendent.



Western Pipe Launches . . . S. S. Bayfield







S. S. BAYFIELD (upper right) sideswipes the water with such force as to produce this heavy wave in its side launching on February 15 at the yards of the Western Pipe and Steel Company, South San Francisco.

L. W. DELHI, vice president in charge of shipbuilding at Western Pipe (inset above), is proudly watching the launching.

LAUNCHING PARTY (center, left), left to right: Lieut. (j.g.) C. A. Mayo, U. S. N.; Lieut. (j.g.) R. C. Little, U. S. N.; Mrs. Francis W. Leahy; Capt. E. F. Palmer; U. S. C. G.; and Mrs. John E. Schmeltzer, sponsor.

MRS. SCHMELTZER (center right) lands a good smash on the Bayfield's nose.

AFTER THE LAUNCHING (bottom). Back row, left to right: L. K. Shaft, Harry Taylor, Rear Admiral W. H. Shea, Allan Toole, W. H. Quarg, B. F. Carter, and Monroe Jackson. Front row: C. McGowan, John Schmeltzer, Mrs. Schmeltzer, and Dave Currier.





by Jerry Scanlon

That Joseph F. Marias, president of the State Board of Harbor Commissioners, will be named to an important overseas post by the U.S. Government, was reported at press time.

At the same time there has been a determined move by shipping friends of Mr. Marias to have him retained in his present State post, a position he has held for four years following his appointment by former Governor Olson.

Mr. Marias, during World War No. 1, rendered distinguished service in French ports and in the Philippines handling harbor affairs, and it is reported that he will be "drafted" like so many other San Francisco marine experts for the latest important assignment.

Captain Patrick H. Gallagher has been appointed port captain of Grace Line on the Pacific Coast by Fred L. Doelker, vice president. Gallagher is one of the veteran skippers of Grace Line in point of service, having advanced from quartermaster in the days of the old Panama Mail Line, subsidiary of Grace.

Captain Thomas Blau, director head of the U. S. Maritime Commission's training division for officers, was a visitor to the Bay Area and other Pacific Coast points the latter part of last month.

Well-known in Pacific Marine circles, Captain Blau is remembered here as master of Pacific Mail Steamship Company's transpacific ships. He was last on the Pacific Coast as skipper on the old liner Colombia, running to the Orient. This vessel sunk about 10 years ago while running from New York, via Central America under the old Panama Mail flag, when she struck a rock down on the lower California coast.

Captain Blau had been, until war was declared, port captain in New York for the Grace Line



TWIN DELIVERY

Representatives of two leading steamship companies gathered with officials of the Maritime Commission and California Shipbuilding Corporation when Calship recently featured the twin delivery of the S. S. John Bidwell to Grace Line and the S. S. Louis McLane to the American-Hawaiian Steamship Company. Seated left to right, are: Fred Hooper, Los Angeles district manager, American-Hawaiian S. S. Co.; Harry Thompson, Los Angeles manager, Grace Line; William Stomant, assistant manager, Grace Line; James Stewart, U. S. M. C.; and Pat Ryan, chief engineer, California Shipbuilding Corporation; Edward Worley, War Shipping Administration, and Dick Street, assistant port engineer, American-Hawaiian S. S. Co., stand watching the proceedings.



CHARLES G. COX

Executive Appointments Accelerate Production At Enterprise

While Enterprise Engine & Foundry Company, San Francisco, has maintained a steady increase in engine deliveries month after month during the last year and a half, a more aggressive production program is now being initiated. Charles G. Cox, vice president, has been appointed general manager of the Diesel Engine and Manufacturing Divisions, and Serge P. Kovaleff placed in charge of plant production. Both of these men have long been identified with the growth and progress of the Enter-

SERGE P. KOVALEFF



prise organization

Mr. Cox, with a wide engineer ing background are mented by basic training obtained through diversified experience on various types of commercial and Govern ment craft, has for a period of years participated in all phases of the Enterprise manufacturing program. He has been prominently identified in the development and advancement of supercharging and turbocharging; and through his leadership many advanced engineering principles of design are now successfully being incorporated in modern Enterprise diesel

Mr. Kovaleff, a graduate of the University of California in the College of Electrical and Mechanical Engineering, entered the company in 1926 as Plant Engineer. Later he became manager of the Process Machinery Division, and in 1940 was advanced to manager of the South San Francisco plant, where he tripled production operations of iron, steel and non-ferrous castings, and expanded the pattern and machine shop facilities to meet the increased war demands.



ROY V. CROWDER

Active in Southern California

Roy V. Crowder, one of the bestknown steamship executives on the West Coast, and a national figure in transportation, circles, is now identified with the Southern Pacific in the Southern part of the State.

Crowder is remembered as passenger traffic manager for the Los Angeles Steamship Company, Under his guidance this concern became one of

the best known in the coastwise and Hawanan travel business until purchased by Matson Navigation Co



T. BUCKLEY

"Old-Timers" Honor Buckley

American President Lines' officers and department heads on March 3 honored D. T. Buckley, comptroller and secretary, at a luncheon at the Commercial Club on the occasion of his 32nd anniversary with the company.

Among the guests were other "old timers' with records paralleling that of Mr. Buckley. These included Thomas J. Cokely, assistant to the vice president in charge of operations, who has been with the company since May, 1904 and ranks as the oldest employee in point of service; Captain Makepiece Ridley, retired, who joined the company in December, 1904; Joseph A. Tognetti, assistant comptroller, whose services began in 1908; Paul H. Bordwell, assistant vice president in charge of the Orient, who joined in 1909; and George S. Williams, assistant general office manager, whose service, beginning in 1911, antedated D. T. Buckley's by six weeks.

E. Russell Lutz, vice president Executive Department, the youngest member in point of service, of the American President Lines official staff, acted as toastmaster. He introduced Mr. Buckley, who spoke for thirty minutes on "Shipping in the Good Old Days," when, as he explained, "the balance sheet was rendered to the president of the company on the back of an envelope."

Others present to pay their respects to the "old timers," and many of them old timers themselves, were Vice Presidents M. J. Buckley, Hugh Mackenzie, Arthur B. Poole, William J. Bush and Department Heads Walter L. Johnstone, Captain W. G. Pearch, Clarence Surridge, Ernest Matteson, Ed Kester and Gene Hoffman.





L. A. BILGE CLUB MEETS IN FORCE

Four hundred and ninety was the attendance mark established the night of February 20th when The Bilge Club of Los Angeles held its Fifteenth Annual Banquet at the Biltmore Hotel in Los Angeles.

With Bilge Club President Captain T. W. Peters at the helm as general chairman, the evening's program proved worthy of the attendance record, and all hands voted the affair a tremendous success. John Marshall was in charge of attendance; the decorations were under the direction of Captain Ed Ryan.



To Jim Smith goes a special cheer for the dinner arrangements; while Joe Costello masterfully cared for refreshments Floyd Nelson was in charge of the two-hour entertainment schedule. T. W. Buckholz was chairman of reception activities.

To our hard-working and efficient secretary, AI F. Boro, goes a big hand for a huge task admirably performed, handling nearly 500 head of Bilgers and their guests as one gigantic job! Win Rash was chairman of the financial affairs.

"Pacific Marine Review" extends congratulations to all those who worked long and diligently and made this Fifteenth Annual Banquet an outstanding success. "The best ever held!" was the unanimous opinion of everyone present.

New Branch Office

C. E. Neal, general manager of the Brooks Equipment Corporation of California, announces the opening of a branch office in the U.S. National Bank Building, Portland, Oregon, This new office will be under the management by Ray C. Denton, who will act as resident engineer to advise with executives of the shipyards in the Portland area on the various applications of Brooks Consolidated ball tooth hinged joints to modern ships. Denton was formerly with the Western Pipe & Steel Corporation in San Francisco, and has had wide experience in the shipbuilding industry.

In addition to its headquarters offices in San Francisco, the Brooks Equipment Corporation of California now maintains branches in Seattle, Portland, and Los Angeles under able resident engineers to advise with shipbuilders in each of those areas in problems of Brooks Flexible Shaft Joint applications.

The passing of William J. "Luke" Biggins on February 17, closed the career of another figure known up and down the Pacific Coast. "Luke" is best remembered for his long association with the Eureka Boiler Works under the late Brady Brothers, William "Bill" and "Ed." Later he was engaged in a whaling enterprise, but for the past several years has been on the retired list.

Mr. Biggins was a native of San Francisco. He is survived by his widow, Paulina, and a daughter, Mrs. P. Kopfer.

CHANGES AT GRACE LINES

Henry S. Parsons, recently named vice president in charge of the Pacific Coast business for W. R. Grace & Co., by Adolf Garni, executive vice president, is rapidly gaining a wide acquaintance in Pacific shipping circles, especially San Francisco, his new general offices.

A. S. Rupley, Pacific Coast manager, W. R. Grace & Co., and Fred L. Doelker, vice president, Grace Lines in this area, have been introducing the new chief around. Mr. Parsons is well-known to a number of leaders in the marine and business world of the Pacific Coast but is meeting with the younger executives who have come to the front since the start of the war.

Mr Parsons took over the post vacated by the resignation of **Edward T**. **Ford** several years ago. The berth was never filled until the pressure of war activities made it necessary.



Typical Ilg-woman, Mrs. Minnie Schuster, is congratulated after receiving "E" emblem during Army-Navy "E" awardiceremonies at the Ilg Eléctric Ventilating Company, Chicago. Ilg President John M. Frank is at left.

FIRMS CELEBRATE "E" AWARDS

Consolidated Steel Corporation's "E" pennant, with white star added for six months of continued high-standard production, is viewed by resident officers at Consolidated Steel Corporation in Los Angeles. C. W. Crawford, manager of Consolidated's Naval Ordnance Division, supports the pennant on the left.





CRANE COMPANY "E"

From the prow-shaped speakers' platform, Naval Officers presented the "E" award for excellence in production to the Chicago Works of Crane Company. This plant received the honor for producing more—more—and still more of its regular product—Valves. Crane branches on the West Coast in California, Oregon and Washington, just as those in other western and eastern states, shared the program which was broadcast over the Blue Network.

Displaying the newly received "E" pennant, left to right below, are Hon. Edward J. Kelly, Mayor, City of Chicago; Estelle Maslowski, Crane employee; Rear Admiral Clark H. Woodward, U. S. N. (Ret.); John H. Collier, president; H. H. Upton, Crane employee, and Col. J. F. Butler, U. S. A.



NEW COMMANDS

Captain Ragnai England, nor on the S.S. Doornes V. Lides of the content of the new steamer that it will M. Dool, should at the Roberton I Shipbuilding Company's yards.

Clyde C. Collins, control on the La for Clab was ratical destroller on the Italian Other Other dek Scentres on the Italian Scripton, second officer, Donald Nelson Kefeld, or the William P. McArthur, third officer.

Mitchel Andree of the West Celeron, which was sold, is churt an next the Bodge. His first assistant is Samuel Kachalio, of the Siletz and Leonard Lee Gregory, was transferred from third assistant on the McArthur to the Dodge.

Rear Admiral J. T. Tawresey, well-known to the older generation of Pacific Coast shipbinders, who ranked as one of the foremost naval constructors of his time, both by the Navy and private yards, died February 17. in Philadelphia, aged 81. He was onetime member of the Naval Board of Inspection and Survey and the U. S. Shipping Board.

During his career he served as Naval Construction Inspector at Pacific as well as Atlantic Coast shippards.

The American Merchant Marine Association, in annual meeting in New York, re-elected Frank J. Taylor, president. R. J. Baker was elected secretary-treasurer and John J. Burns, general counsel. Others elected:

Joseph T. Lykes, executive vicepresident, Lykes Bros. Steamship Co.; Lewis D. Parmeless, executive vicepresident, AGWI Lines, representing the coastal group; John McAuliffe, president, Isthmian Steamship Co., and H. W. Warley, president of Calmar Line, representing the intercoastal group. The offshore foreign group will be represented by R. Ranney Adams, executive vice-president, Grace Line; John F. Gehan, vice-president, American Export Line; Basil Harris, president, United States Lines; A. V. Moore, Moore-McCormack Steamship Co.; H. Harris Robson, vice-president, United Fruit Company.

James C. Fogarty, who served Balfour, Guthrie & Co., for thirty-seven years, until he was retired about seven years ago with the title of marine superintendent, passed away in his Alameda home, February 7. He was 71. His son, William J. "Bill" has long been identified with Pacific Coast tug-

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MARINE LIBRARY ASSOCIATION COMES TO SAN FRANCISCO

at this moment are well over 200.000 library books, distributed among many ships sailing for many ports. They have been placed on board by the American Merchant Marine Library Ass'n. Seamen on the Pacific Coast are among those who can now enjoy the friendly interest of this association.

February 1, 1943, marked the opening of this association's San Francisco office. Seldom, if ever, will a merchant ship leave this port without a supply of books for the off-hour periods for its crew and officers.

Not haphazardly does this organization extend its aid. With almost 25 years' experience, the services are made with an intelligent consideration for the needs of the men. The library units placed on board consist of from 40 to 240 books, a carefully selected assortment. In addition, hundreds of magazines are dispatched with each library unit. All library cases are disinfected and freshly painted before dispatching. When the voyage is ended, off comes that library to be replaced by another one containing a new assortment.

On long voyages, or if a ship is carrying an extra large crew, chances are it will be provided with more than one library chest. En route to a far-off destination, a ship may make a stop at a port where an association branch is maintained; if desired, a transfer of the library unit may be made at that port... an unread one for an assortment that has been perused. The association maintains offices in Baltimore, Boston, New Orleans, "The Soo," Philadelphia,

Seattle, and San Francisco, with headquarters in New York City. In each library unit are books appealing to a wide range of preferences, from "Westerns" to world affairs, from mysteries to medicine, from sociology to seamanship, not forgetting best sellers, for which there are many requests. Selections are chosen with due regard to eye appeal and current topics, and effort is made to have the assortment in its case as attractive as book stock will permit.

At AMMLA's headquarters are kept records of which ships have been served, and a constant check is made so that no vessel leaves any port office without provision being made for a traveling library. The national advisory board is composed of prominent shipping men, philanthropists, and librarians, headed by Mrs. Henry Howard, founder and president of the "Public Library of the High Seas."

The work AMMLA does goes beyond service to ship crews. On many a lonely reef, the lighthouse keeper and his family look eagerly forward to the library dispatched by the association. Stations of the U. S. Coast Guard and dredges of the U. S. Army Engineers are supplied too.

Mr. William Schmutz, who came to San Francisco to establish a "floating library" in this Port, pointed out these particulars about the service. "Our basic aim," he said, "is to provide seamen with the advantages of a free library. In this we try to supply also a demand for technical books. These technical books include new works on navigation, radio, stowage, nautical engineering, cooking, first aid at sea and similar sub-

jects. There are fiction and non-fiction books, too.

"Literature supplied by the U. S. Public Health Service," he continued, "and manuals for citizenship supplied by the D.A.R. are placed in each library. Every library dispatched contains a Bible and a lifeboatman's manual.

"It is necessary to receive generous presents of good books from time to time. There is always need for more." He asks the readers of the Pacific Marine Review to remember that an idle book is a wasted resource.

Books may be sent to 107 Embarcadero, San Francisco. Mrs. Dorothy Dickens MacDonald, who comes to the association as the Pacific Coast representative, is in charge of dispatching books from this port.

Seamen who want to go up for a raise in grade, or who want to choose definite titles for recreational reading are encouraged to drop in at 107 Embarcadero, to choose the books they want.

A-C Welding: Speed is increased 20 to 30 per cent, and power costs are cut one-third with the Flexarc A-C Welders described in this new booklet (B-3136 Department 7-N-20) by Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

The new 12-page booklet compares advantages of ac and de welding. Ac welders increase output because of the absence of magnetic arc blow, ease in using heavy electrodes with higher currents, and ability to make good welds in all positions.

Featured are the 500-ampere industrial welder for high-speed, continuous welding on all types of heavy construction; and the 300-ampere portable welder for heavy-duty work. Both models have built-in power-factor correction.

WALLACE BETTER BENDS

Wallace modern, full automatic, hydraulic pipe bending machines are helping to keep schedules at this Fore River Yard, also at most private and government yards. One user states he now bends in four hours the work which previously required six days by the heating and filling method.

Wallace benders are also suitable for aircraft parts, marine, motor and general production of tubular, extruded and rolled parts.

Complete details on request

Exclusive features: The Wallace Machine is the only model with full automatic two-lever control, as emphasized in the photo at the right. Any bend up to 180° may be instantly selected through automatic pre-selector. Exact duplication assured. Hydraulic clamps prevent slippage, and hydraulic operation with full automatic control definitely provides precision setting of mandrel for each bend. Ample clearance for making compound bends. Ideal for steel, copper and aluminum tubing of all types. Available in 8 sizes for work up to $65 \slash\!\!/8''$ O.D. Other types of machines available up to 16'' pipe size.



Keep Posted!

NEW EQUIPMENT AND MACHINERY FOR YARD, SHIP AND DOCK

BIG MILL CUTS TIME 60 PER CENT

MGENUITY IN designing equipment to produce the materials of war is graphically illustrated in the big Ingersoll open-side milling and boring machine installed recently at the Mt. Vernon, Ohio, plant of The Coopep-Bessemer Corporation.

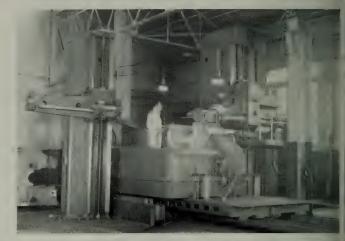
Virtually all Cooper-Besseiner compressors are today furnished for the production of high-octane gasoline, synthetic rubber, synthetic ammonia, and other essential war materials. The 131-ton milling and boring machine is one of the factors responsible for boosting the output of these compressors. It is currently being used to mill and bore large motor-driven compressor beds and also to machine the big bed castings for type GMV 10-cylinder compressor engines. A 40 per cent saving in time has been effected on each compressor bed, and over 62 per cent saving in time on each GMV engine job, according to corporation officials.

The handling of precision work is facilitated by means of a compact, portable control panel containing thirteen switch buttons governing every movement of the machine. By means of this remote control arrangement, the operator can stand at any point along the work-piece to observe and control the actual operations as they take place. In milling a 32-ton compressor bed, for instance, he can move this weight to within one-thousandth of an inch of a required setting by merely pressing a button.

The flexibility of the machine's speed permits a wide range of operations—from drilling a \$\frac{1}{2}\$-inch hole at a speed up to 240 revolutions a minute, to boring a 30-inch cylinder at 2 revolutions a minute.

Three hundred and fifty cubic yards of concrete were necessary to form the foundation.

Nine separate motors, ranging from



BIG INGERSOLL open-side milling and boring machine (above) handles compressor beds in sizes up to 10 feet high, 5 feet wide and 26 feet long.

O PERATOR (right) governs precision accuracy of machine with remote control panel at point of machine operation.



a one-third horsepower to twenty horsepower, are employed in its operation.

The table of the machine, 98 inches wide and 26 feet long, was the largest single unit included in the six carloads of parts that constitute the entire assembly.

This equipment not only speeds an important phase of the Cooper-Bessemer's war production operations, but the unit is filling a vital service to of Mt. Vernon by being made available other industries within a wide radius to them for handling emergency jobs.

Glass Fiber Cable Hanger

For use in mines, shipyards and on construction projects, a durable, glass-fiber cable hanger has been developed by Westinghouse Electric and Manufacturing Company. Production delays caused by damaged cable are prevented when cables are held up off the floor or ground.

This glass fiber cable strap is impervious to moisture and will not rot, stretch or shrink. This hanger is capable of supporting approximately 200 pounds. The glass fibers are protected



Glass Fiber Cable Hanger

and the insulation value increased by heat-resisting varnish treatment.

The standard size hanger is 14" long by 112" wide. The one-half inch metal rommet in each end permits nailing o wooden pillars. Straps are used to upport cable as shown or can be wrapped around cable to prevent slipsage.

Jnique acing Tool

A new surface facing tool to take he place of standard end mills and hell end mills for surface facing is muounced by Rob-

rt H. Clark Comany, Los Angeles. alifornia. As shown erc, it consists of a apered (or straight) hank and body with hree adjustable high peed bits, which ray be set for any iameter within the ange of the tool. Vith only four tools ny diameter from " to 41/2" inclusive ray be obtained ithout being limit-I to standard fraconal dimensions. A easuring gauge is rovided with each ol for quick and

of for quick and currate size adjustnents. The bits can be easily reground of can be replaced with new bits at imparatively small cost, thus lengthnine the life of the tool indefinitely. Each of the four tools covers the targe of seven or more end mills, with the additional advantage that any intendiate size may be obtained. Clark or increase is the trade name of the wedvice, and according to the manacturer, shipments are now being ade promptly on suitable priorities.





With fighting men and ships laden with the tools of war. These precious cargoes are guided through calm and storm and lurking perils by the magic of communications.

Remler shares the honor of manufacturing various types of announcing and communication equipment for our Navy and Merchant Marine. The men and women of this company, working night and day, are proud of the equipment we make and are prouder still to be of service to the men who get the convoys through.

Remler has the experience and if your problem is war communication and if we can help with any part of your task — count on us to the utmost limit of our capacity.

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An Easy Way To Make Brick Refractory Linings Last Longer...

An application of Brickseal, a semiplastic, highly glazed, monolithic coating, prevents brick refractory linings from developing minute cracks or fissures in brick joints when forced to undergo rapid changes in temperature. Once on, Brickseal will not crack, peel, bloat, or blister and . . . fuel oil or combustion gases do not impair it. Brickseal also rebinds brick already cracked or loosened.

BRICKSEAL REFRACTORY CO.

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This Ship WAS worth its weight in gold . . .

X Z I T prevents Sparks and Stack Fires

Don't allow soot to cause sparks or a stack fire aboard your ship! XZIT removes these dangerous products of combustion easily... thoroughly! By keeping boilers and stacks free of these hazards, you also promote maximum heat transfer...reduce blowings and cleaning. XZIT stops sparking instantly when tossed into the fire box.



A Small Marine Range

The rost practical full width, heavy duty cost to state to installations have control by I be too aster, I'm or Detroit C. "ed the Marine Master "Low Watter 12 kwy, the new transe is especial" in det and for sub-classes and other small anythery vessels.

Specifications of the "Low Watter" muts, each 2 kw, an automatic oven their mostal, removable sea tack, guard rail, and four round surface units, each 2 kw. I'm surface component, which is preferred by many for its speed at dilectables, may be replaced by any of several different surface combinations at the purchaser's option.

The "Low Watter" is one of a complete line of heavy duty electric ranges and accelerate cooking equipment manufactured by Electromaster for naval and maritime vessels, inditiary camps and bases, war plants, hospitals, and other essential uses. Full details, including data, specifications, and drawings, are available from Electromaster, Inc., 1809 East Atwater, Detroit, Mosi-



Wartime Flood-lighting Projectors

To meet wartime needs for protective flood-lighting and Eghting of yards, area ways and other outdoor work places, the Benjamin Electric Mfg. Co., Des Plaines, Illinois, has now made available the new Type RDS Floodlighting Projectors.

Replacing the Benjamin Type RD Projectors, these new scamless steel housing units embody all the features of the previous models with the exception that all parts formerly made of aluminum, brass or other non-ferrous metals are now furnished in steel or cast iron specially treated by porcelain enameling, and other rust-proofing to render them exceptionally resistant to corrosive atmospheric influences and weathering.

These new models here the same efficient silvered mineral restal class reflector and other model neal teatures or the RD Protector. Among these neathers are adjustability on the heart spread over the entry learn range from narrow to wide, which makes it possible to not be heart to the requirements of the mealthness, special to cusing mechanism to permit placement of light exactly where needed without waste; easy installation, provisions to facilitate maintenance and lamp changes; quick-actus, sactivitype cover clamps. Units are furnished

with vertical and horizontal stops, which automatically reposition projector and eliminate need to resetting after pronoctor has been tilted or turned around for cleaning or inspection.

The new RDS units are jurnished in two models it in RDS 14 for 300 wait and 500-wait accept service lamps or 500-wait flood-lighting lamps; the RDS 18 for 750-wait and 1000-wait general service lamps, or 1000-wait flood lighting lamps. Each model is supplied with plain, stuppled or ribbed, heat-resisting glass covers.

Now Available -

A substitute for the critical metals

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(Plastic)

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Manufacturing at the present for the United States Navy and for ships under the control of the Maritime Commission.

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BRUSH ENGINEERING IN . . . THE MODERN SHIPYARD

Builders of submarines, sub-chasers, warships, cargo vessels, and other craft are gaining new benefits from the comparatively new art of brush engineering.

The scope of brush engineering is being expanded under the pressure of war production by The Osborn Manufacturing Company of Cleveland, world's largest producer of industrial brushes.

Going into various marine construction industries, the company has been making a thorough study of every operation in which the use of rotary power brushes or hand brushes may be indicated. As a result, many brushing operations have been recommended or put into effect, with an immense increase in the quality of work and the saying of time.

Through this analysis, Osborn has prepared a considerable volume of new data about brushes and their application and has worked out techniques for many brushing applications:—the type of brush used for each job, whether it is a disk, cup or end brush; the apphance on which it is attached, whether it is a srinder head, flexible shall, are tool, or electric drill; the could of the brush, whether wire,

DOUBLE - ROW CUP BRUS H (above), 6" in diameter with a 5/8" arbor hole, is highly effective in cleaning flat surface welds.

DISK - CENTER WIRE WHEEL sections (at right) are designed for safe, fast and efficient operation of modern highspeed equipment and portable tools where extraheavy brushing is required, such as the weld shown here.

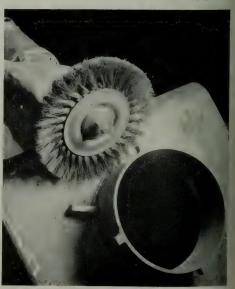
fibre, nylon, cord or bristle or some combination of these; the speeds at which the brushes are run; the pressure exerted against the brush by the material under treatment; the position of the material being brushed with relation to the brush surface, or the type of fixture, if any, to hold the material. All these and many other clements of brush engineering have been worked out by Osborn technical men in cooperation with industry.

Welded construction, increasing the rate that ships are sent down the ways from American docks, calls for a great amount of power brush work on the welded metal.

One of the large scale brushing jobs worked out by Osborn was the removal of all rust and Government No. 48 brown paint from the edges of steel plates to be welded for bulkheads. This process was made necessary particularly by the new automatic welding methods. A marked increase in efficiency resulted.

Some of the other brushing jobs recommended to the shipbuilders were:-preparation of Monel Metal strips for walls prior to spot welding; removal of slag and scale from flat surface welds made inside the machine shops; removal of slag and scale from fillet welds; general cleaning and polishing, removing slag and other matter from buttons and welding pads on receptacle boxes, removing slag and scale from inside the ends of steel pipe to be welded, polishing to remove light tool marks and scratches from Monel Metal strips, removing rust and scale from steel castings, and complete scale removal from armor plate made of unpickled steel alloy.

(More "Keep Posted" on page 101)



PACIFIC MARINE REVIEW

BRONZE NAVY and MARITIME VALVES

NOW available through YOUR JOBBERS ...from Vancouver to San Diego...the name GREENBERG is your Assurance of Quality!

CAT. No. 1774 NAVY SPEC. 45V4



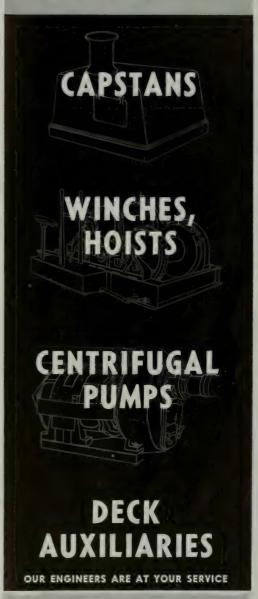


CAT. No. 774 MARITIME 150 lb.

Hose Valves .						۰							1½" to 6"
Check Valves									٠	۰	۰		2" to 10"
Gate Valves .													2" to 10"
Globe, Angle	a	nd	(Cr	OS	s	٧٥	alv	vе	S			1½" to 8"



JAEGER



THE JAEGER MACHINE COMPANY 907 DUBLIN AVE., COLUMBUS, OHIO Branches and Service in 100 Principal Cities

STEADY AS YOU GO!

(Continued from page 79)

solve as they come up. No matter how well prepared a person feels he is for a new port, or a new commodity, new conditions arise, peculiar to his particular ship, or the time of the year, that have to be solved on the scene.

All of the nitrate ports are open ports on the Chilean coast, and pilots are available and necessary in order to moor in the right berth. You will be anchored with both anchors down and seventy-five fathoms of chain to each anchor, head to sea and stern moored to a buoy.

When you get ready to leave, it would be a simple matter to let go your stern moorings, and heave on your anchors, going ahead when they break out and stand right out to sea, but do not do it. You will be asked, "Do you need a pilot?" Your only answer must be, "Yes," for the Captain of the Port is either the pilot, or the Chief Pilot, if the port is large enough, and if you say that you do not require a pilot, you will find that the stevedores will be called off your ship when you are about four hundred tons short of your full load. Because the sea is always choppy there, no one can accurately read the Plimsoll mark, and you are bluntly informed that you are down to your marks, though it is obvious that you are not. To protect yourself you have to call a survey, hire the surveyors, who read your draft marks and find as you did, that you are not down to your load line. Their report you submit to the Captain of the Port, who still says, "No!" You are compelled to sail short of weight. Your owners are stuck for the cost of the survey, but you have saved them a less than load charge from the charterers by having called the survey, for it shows that you could have taken the required load.

At any rate, paying for the pilot, and a few of these nice clean pieces of dunnage we mentioned earlier, would have saved you the delay and trouble, as well as the expense of the survey.

There is a great difference between the legal rate of exchange, and the rate any bank will give you for your American money. The charterer gives you the legal rate. Therefore carry enough American money for your crew advances and to pay all of your own bills for stores and provisions. Be sure to pay for them yourself.

Slings

Among your stores for the charter include a couple of coils of three-inch rope, and before you arrive in Chile, have about a hundred slings made up. They should be regular rope slings, spliced with three tucks, and made of one and one-half fathoms of rope before splicing. A strop is not acceptable. The laws down there require that a new sling must be used, and changed whenever the lighter people consider it necessary. They try to change it every lighter.

The sling is made fast to the blacksmith with a shackle, and the nitrate is loaded in dump tubs that hold one ton each, so that each lighter represents about fifty hoists. The strop on the blacksmith is hooked on each tub in turn, in the lighter. We found a good way to cut down on the consumption of slings was to have the used one turned in by the foreman to get a new one, and then take the used ones out to sea, and either throw them over the side or give them in for salvage in the "States" upon our return. Once we inaugurated this system, sling consumption reduced to half the original requirements.

The loading is done through the top deck hatches, all of the hatches remaining on and in place, except for about three that are removed to allow the hatches to be spread. The nitrate is dumped on top of the hatches and spread around through the different spaces between the covers. While loading the lower hold, the 'tween deck hatches are removed, but the

strong backs and beams are left in place.

The sweepers should sweep all strongbacks and beams each night so that the nitrate will not cake on them and make it difficult to put the hatches on properly before standing out to sea.

Bagged nitrate is handled like any other sacked cargo, except that being a heavy cargo, the weights must be distributed for trim and stability, and availability to work as many gangs as possible at every discharging port.

If you go to the dock at Antofagasta, you will load from the

MARINE CABLE

FLEXIBLE .

WATER-PROOF · ACID-RESISTANT

IDEAL for use on ships and docks. The water repellent gaskets between armor and conductors prevent deformation of the armor and prevent creeping and opening up of armor under severe vibration. The bond is so tight that corrosive liquids, gases and moisture cannot seep into junction boxes. The armor is ideal for synthetic and asbestos covered wires. Spiralok conforms to Shipboard Cable Standards and meets requirements of Marine Inspection and Navigation.

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To R.B.M. and George L.:

The Skipper is sorry to have neither the space or the material to answer fully either of your questions in this issue, but it will be right there in "Steady As You Go" in the April issue.

New Type Radio For Sailors

The War Shipping Administration announces that radio programs, news broadcasts and events of world-wide interest will soon be heard by all American merchant sailors at sea.

The announcement said that an order had been placed for 2500 of the latest specially designed type of seagoing radio receiving sets which are being installed on all WSA operated vessels. It was ex-

plained that the standard receiving set when in use radiates a signal which can be picked up by enemy vessels and submarines with the aid of a loop antenna radio direction finder, and can be used by them as a guide in locating the ship,on which a receiver is located. For this reason, the use of all ordinary broadcast and short wave receiving sets has been prohibited aboard merchant vessels.

Recently a receiving set has been perfected that eliminates this hazard, and they are now being installed on all the Maritime Commission built ships.

Transportation Specialists Needed

Traffic and transportation specialists, \$2,600 to \$6,500 a year, are sought for Federal employment throughout the United States, the Civil Service Commission announced recently.

These specialists will plan, direct, and supervise traffic and transportation programs in such agencies as the Office of Defense Transportation, the War Department, the Maritime Com-

mission, the Board of Investigation and Research, and the War Relocation Authority.

Persons are particularly needed who have qualifying traffic or transportation experience in such activities as rate construction or analysis, cost studies, maintenance of equipment or maintenance of way, appraisal or valuation, terminal or port management, inspectional and investigational work, warehousing, ship stowage, packaging and crating, stevedoring, freight forwarding, exporting and importing; or in such positions as analyst or statistician, division superintendent, or train

No written test will be given, and applications will be rated on the basis of the experience shown. Qualified persons are urged to apply immediately.

Applications and complete information may be obtained at first- and second-class post offices, or from the U. S. Civil Service Commission at Washington, D.C. Persons who have filed applications or supplementary statements with the Commission at Washington, D.C., since October 1, 1942, will be given appropriate consideration on the basis of their reports now on file.

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Welder's "Booster" Mitt

At the request of one of the large shipyards, where much overhead welding is done, the Industrial Gloves Company of Danville, Illinois, has developed a new mitten-guard, or "booster" for use with any welder's ordinary gauntlet glove

On most overhead welding jobs, considerable costly damage is done to the left-hand gauntlet at the junction of thumb and palm. Made of special heat-resistant leather, this guard, designed as a mitten with open-end thumb, is slipped easily over the left hand glove when actual welding is started.

The construction of the guard

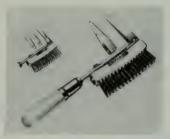


at the thumb opening provides the needed protection against sparks and molten metal that ordinarily drop down and rest on that portion of the glove—not only damaging the glove itself but oftentimes causing severe, painful burns to the welder.

The new guard is readily slipped off after the welding is completed so that the gloved hand is ready for the necessary accurate handling of parts, tools, etc. The "booster" guard will save many hours of glove wear at small cost—and at the same time will give the welder much extra protection where it is badly needed—on the left hand.

Dual Weld Cleaning Tool

A new and improved weld cleaning tool for welders in shippards, aircraft and tank plants, boiler and sheet metal shops, and for oil pipe line, factory maintenance and general welding work is now being manufactured under the trade name Dual-Tool by the Atlas Welding Accessories Company, Detroit, Michigan.



The Dual-Tool combines a wire bristle brush and a slap-removing bit in one unit and features a specially-developed brush holder which permits removal of brush for reversing or replacement by inserting screw driver or other sharp object at rear end of holder. An up and outward pry releases tension; brush pops out. Reverse action for inserting and brush snaps into a firm, rigid seat.

Every part of the tool is replaceable, and Atlas manufactures a complete line of replacement parts, including interchangeable cone and chisel bits.



for servicing workers near their work

Industrial war plants, shipyards and aircraft plants, munitions and loading plants, are finding necessary PORT-ABLE equipment for transporting hot foods and liquids to workers NEAR THEIR WORK. Immensely increased personnel, wide-spread operations, overcrowded cafeterias, many workers far from cafeterias, are necessitating decentralizing war-plant feeding operations and a need for portable equipment in which hot foods and liquids can be kept hot while being transported anywhere indoors or outdoors throughout the plant.

Over 100 large war plants already have AerVoiDs in service and doing a job no other equipment can do so efficiently and with such small expenditure of critical materials, small upkeep, low operation cost.

How and why AerVoiDs are going into war plants in constantly increasing numbers, in the words of the users themselves, is told in a new circular.

VACUUM CAN COMPANY 25 S. HOYNE AVENUE - CHICAGO



RUGGED CONSTRUCTION of the Clayton boring bar holder with the method of attaching, as well as the method of rigidly holding the boring bar, is clearly shown in this shop view.

BORING BAR AND HOLDER

Featuring a unique dual-clamping arrangement that separately holds the boring bar in the holder and the holder to the lathe, the Clayton Manufacturing Company of Alhambra, California, announces production of large type bars and bar holders for lathe swings from 9" to 36". The special design of the holder, allowing removal of the holder from the lathe without disturbing alignment of the boring bar, saves a considerable amount of time as well as increasing the accuracy of duplicate operations

Another time-saving feature of the Clayton boring bars and holders, are the permanent calibrations on the bars, which eliminate the need for file marks or chalk markings. These calibrations are engraved into each end of the bar for some distance back from the tool bit holes in quarter-inch calibrations, thereby eliminating the need for file marks, which consume time to make. The bars are more rigid, chatter is eliminated and it reduces the opportunity of errors through use of the wrong file marking.

With the holder, which has a separate clamp for attaching the holder to the lathe compound, it is possible to maintain the same tool height and bar stick-out in such duplicate opera-

tions as boring, turning and cutting of bushings, since the bar need never be removed from the holder when the holder is removed from the lathe. The Clayton holder is the only one offering this time-saving advantage.

The bits are held in position with Allen screws, thus saving the damage to tools through the use of wrenches on the cutting edge to remove the tool bits.

New Self-Priming Pumps

New self-priming pumps have been developed especially for the marine field by Gould Pumps, Inc., Seneca Falls, N. Y.

These pumps, designated "Fig. 2500," find use in the pumping of bilge in boats, engine-cooling water and general service where self-priming pumps are desirable.

Their outstanding features, in addition to being quick self-priming, include the ability to handle air or water alone, or air and water together. They are small in size, light in weight, and constructed for easy access to interior without disturbing pipe connections. They can be operated at a speed suitable for direct connection to electric motor, or for belt or chain drive from engine shaft.

GOULD SELF-PRIMING PUMPS, especially developed for the marine field.



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NOTE: Due to emergency restrictions, and until further notice, Pacific Marine Review will publish this directory in two sections, appearing in alternate issues. Atlantic, Lakes and Rivers section has been omitted from this issue and will appear in the April issue and on alternate mosths thereafter. **AETNA CONSTRUCTION COMPANY**

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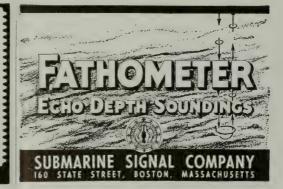


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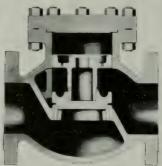
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BOOK REVIEWS

American Merchant Marine Conference Proceedings: The Annual Proceedings of the Propeller Club of the United States are now recognized as valuable source material on the American Merchant Marine, its vital contribution to the national welfare, and its indispensability in the equation of American sea power.

Comprised in this volume will be found the considered thought of the leading experts of the maritime industry on shipbuilding, ship operation, and national maritime policy, as submitted before the Sixteenth Annual Convention of the Propeller Club of the United States and American Merchant Marine Congress in session at the Waldorf-Astoria Hotel, New York, last October.

The widespread favorable response to former publications of the Annual Proceedings, from universities, schools, colleges, libraries, and other centers of instruction and learning, has encouraged the editors to believe that this volume covering the 1942 Proceedings will meet with an even more enthusiastic reception by reason of the fact that it brings the problems of the merchant marine up to date, and includes many added features which will be found extremely useful for the permanent record as source mate-

To all who have contributed thought, effort and material in the preparation of this volume, the editors express grateful appreciation, and to the thousands of readers throughout the country we believe that the Proceedings will carry a message of inspiration and hope for the permanent establishment of an adequate American merchant marine.

Merchant Ships 1942; by E. C. Talbot Booth and E. B. R. Sargent; 8½" x 12" pages; 900 half tones; 2400 line drawings of ships, 700 line drawings of house flags, 1500 line drawings of funnels; bound in navy blue buckram with gold stampings. Published by Macmillan, New York. Price \$19.00 net.

This is the 1942 edition of a standard work of reference on merchant ships of the world. It contains: German aircraft recognition silhouettes; funnels of world shipping companies; explanation of terms used; line drawings of outboard profiles; shipping companies of the world with lists of their ships, descriptions of their services and other data; British trawling companies; and European fishing vessels.

All of this is arranged largely from the viewpoint of the man who wishes to be able to recognize and identify

The book is well indexed and carefully checked for accuracy and should be very valuable to many shipping executives. A striking frontispiece is the map of British Empire world-wide normal shipping services as of 1937, showing a black dot for every British ship over 3000 tons gross.

The 2400 line drawings of type ships are each captioned with the names of sister ships, the home port and line and data on the ship. These drawings represent some six or, seven thousand ships. Each drawing is to the same scale, 150 feet to the inch, so that comparisons of size and appearance can be accurately made.

A copy of this book on the living room tables of homes overlooking busy harbors would provide interesting entertainment and settle the many arguments as to the question "What ship is that two-stacker?"

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The Davis Emergency Equipment Company, Newark, N. J., has developed new first-aid kits to meet the recent regulations of the United States Coast Guard.

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N. W. Pickering Reports for Duty

Captain Nelson W. Pickering, U.S. N.R., had been ordered to report for active duty in the United States Navy on February 1, and accordingly has resigned as president of Farrel-Birmingham Company, Inc., of Ansonia, Connecticut and Buffalo, New York. Captain Pickering will be attached to

CAPT. N. W. PICKERING, U.S.N.R.

the Third Naval District at New York, in charge of operations of District patrol vessels.

Before coming to Farrel-Birmingham Company in 1919, Captain Pickering served for fifteen years in the Navy. Graduating from Annapolis in 1908, and after a term of sea duty, he was selected for post-graduate instruction in ordnance engineering, which included duty at the Naval gun factory, the proving grounds, and the Bethlehem Steel Company. He was sent to England to complete the instructional course at Barr Stroud Optical Works, Glasgow, Scotland, and the Whitehead Torpedo Works, Weymouth, England. Later he served as Chief of Gun Section, Bureau of Ordnance, Navy Department, He was assigned to duty overseas during World War I in connection with ordnance matters pertaining to heavy gun construction and liaison work with the Naval railway batteries in France, After the Armistice, he served for a year as gunnery officer of the U.S.S. North Dakota.

During his business career, Captain Pickering maintained his interest in the naval service. He retained his commission in the United States Naval

Reserve Force and Naval Militia in Connecticut from 1924 until 1940. He was Naval Aide to Governor Trumbull and also served in the same capacity during Governor Baldwin's first term.

At a testimonial dinner tendered to him by civic and business associates at the Hotel Clark in Derby on January 25, Captain Pickering was presented with a handsome silver tray bearing the simple inscription, "To Captain Nelson W. Pickering from his Ansonia Friends," in token of their respect and esteem.



J. E. SCHMELTZER

Shipbuilding Director Passes

E. Schmeltzer, director of the Division of Emergency Ship Construction of the U.S. Maritime Commission, died suddenly Wednesday night, February 24, while en route from Providence to Washington, D. C. He had recently returned to the East after several weeks on the West Coast inspecting shipyards.

While on the Pacific Coast, he was present when Mrs. Schmeltzer christened the S. S. Edmund Fanning at the California Shipbuilding Corp., Los Angeles, and the S. S. Bayfield, February 15, at Western Pipe and Steel Company, South San Francisco.

TECHNICAL MODEL SERVICE

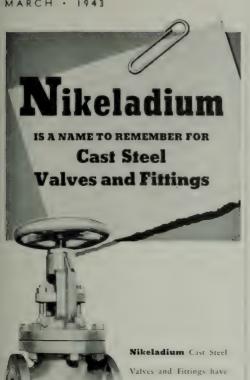
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been called to active service.

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PICTURED ON BOARD a Liberty ship at the Marinship yard in Sausalito is Hon. David Bowes-Lyon, right, brother of Britain's Queen Elizabeth, who saw his first American shipyard in company with W. E. Waste, left, and K. K. Bechtel, center, general manager and president, respectively, of the Mariinship Corporation. The distinguished visitor is on a government mission, working through the British Embassy in Washington.



CAPTAIN ANDREAS C. PAULSEN, veteran Grace Line skipper, whose last command was the Santa Paula, is now retired from active sea duty and is making his home back in San Francisco, the port he sailed from to world ports for many companies.



PLEASED EXPRESSIONS are displayed by W. W. Glosser, vice president, Pacific Coast Division Hubbard & Company, left; Capt. Stanley M. Haight, Commanding Officer, Naval Net Depot, Tiburon, Calif., and R. E. Fisher, vice president, Pacific Gas and Electric Company, right. The occasion is the Army-Navy "E" award for Hubbard & Company, January 27, 1943.

Grace Line's offices in Los Angeles have been moved to Pacific Mutual Building. Harry Thompson is in charge for the duration.

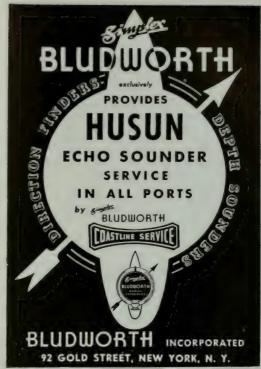
Joseph W. Nelson, well-known in Bay Area marine circles, is control engineer for the Marinship Corporation. Sausalito.

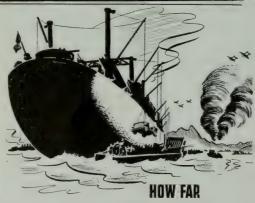
Ralph Miller, Chief Navy Inspector for the Pacific Bridge Company's operations at Hunter's Point, has discovered a complete record of the construction of Drydock No. 3, built twenty-secen years ago at the start of World War No. 1. F. Neitzel was superintendent of construction for Union Iron Works Company and George J. Wagner was resident engineer. The records show that they, as today had their troubles with their labor problems, bad weather and cave-ins.

CAPTAIN ANDREW TOWNSEND, as we go to press, was being mentioned as a strong possibility for appointment as Pilot Commissioner in San Francisco, by Governor Warren.

Captain Townsend is one of Matson Navigation's best known masters. He has been shore-side in various executive capacities for some time.







CAN FREEDOM REACH ?

As far as ships go, carrying the bone and sinew of freedom . . . the troops, food, guns, and gear that keep freedom free. Men on our battlefronts know this. They know they can go, eat, fight, and win, with our American Merchant Marine carrying on.

The reach of MATSON ships is long, because our experience is long . . . over six decades long . . . preparing us for the very job we are now privileged to be doing, with all our ships and all our men.

All freight shipments are under Government supervision until victory. Consult our freight department for details regarding freight movements to ports we serve.

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Marines Get Tough.

Here is "Tarzan" training for Marines — crossing stream by rope ladder in drill over an "Assault Cours — training that makes them the toughest of fighting men. In this training, as well as on all the fighting from of America and our Allies, rope is playing a vital important part. That is the reason we must conservope, take the best care of it to make it last longer



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Official Organ

Pacific American Steamship Association

Shipowners Association of the Pacific Coast

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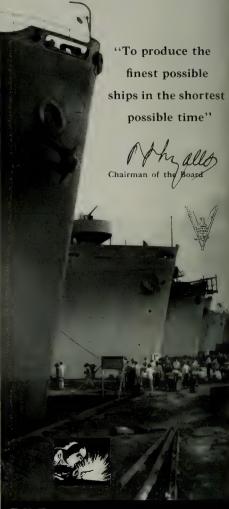
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Editorial Comment

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been recognized by the award of the Maritime Commission M Pennant, the Victory Fleet Flag, and Maritime Merit Badges, "in recognition of outstanding achievement."



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Pacific IMARINE REVIEW

Post-War Shipping Policy

THE GENERAL COUNCIL of British Shipping recently issued a report on Post-War Shipping Policy, which contains many significant and interesting statements.

This report visualizes a post-war world in which for a time the entire energies of shipping will be given to relief and reconstruction under national or United Nations' control—this period to be followed by the emergence of a free world market. In the first period, the merchant fleets of allied and neutral nations are to be given a proportionate share in the transport of goods at comparable rates. After the emergence of the free market stage, all fleets must enjoy equal opportunity to engage in transport.

"A large and vigorous British Marine, which is essential to our economy, and in accord with our traditions, definitely requires as its setting, that international trade and its transportation be substantially free, and that British trade shall continue to provide a substantial proportion of total world trade."

One very interesting and, we think, timely suggestion is that the United States and Great Britain give very careful consideration to the time of stopping of mass production of war-standard ships and putting the emphasis on building specialized types designed and adapted for individual routes and trades.

Government is advised that it should carefully consider: the effects on shipping of air subsidy policies; the control of shipbuilding costs by work spread and by sub-

sidy; the dangers inherent in state control or ownership of overseas shipping; and the proper methods of restoring Government requisitioned ships to British and foreign owners.

This report is suggestive rather than positive. It opens up the whole post-war shipping situation and invites governmental consideration of the problems. It presents a situation requiring very careful study, and it is, no doubt, receiving just that from the American Merchant Marine Council, the W. S. A. and various bodies representing American shipowners.

By the end of this war, the United Nations will control 80 per cent or more of the world's merchant tonnage.

The shipping policy adopted by this group of nations will therefore control the world's merchant marine. That policy can be one of the greatest factors in the preservation of world peace and international prosperity. That policy may very obviously be the provocation which will start another world conflict.

We of the United States at the close of this war will be the world's largest shipowners and ship operators, and our vote in forming the post-war shipping policy will be practically final. We should therefore give earnest heed to this matter and see that this vote is cast intelligently, with a comprehensive view of world interests, and not from the standpoint of nationalism.

Seamen Urgently Needed

Administration has asked all men holding an A. B. certificate, or unlimited marine license as a first, second, or third assistant, or as a first or second mate, to volunteer by wire to return to their old jobs.

Shipping . . . the Key to Victory

N FEBRUARY 20TH, a national radio audience heard Frank J. Taylor, president of the American Marine Institute, pay a glowing tribute to the American steamship industry. Said he:

"Long before Pearl Harbor the American steamship industry went on a war footing, and was the first major industry to become streamlined and stabilized for the prosecution of the war. This country's steamship companies are managing and operating the largest fleet of merchant ships ever to fly the American flag. The cargoes they carry are record-making in volume. Shipping is the key to victory in this global war, and it is imperative that it be used most efficiently at all times.

"The Government has entrusted American shipowners and operators with the tremendous task of operation. Private steamship companies are not only operating the vessels which they have sold, or loaned to the Government for the duration, but are also handling the vast number of new ships which are being produced in our shipyards. Behind the brave men who sail our ships, is a hard-working, experienced shore personnel who look after the thousand and one details that must be attended to before any ship is ready for a wartime voyage.

"Commendation should be given to the personnel that load and sail the vessels of the American shipping fleet for the splendid cooperation in dispatching and transporting troops, war materials, foods and supplies to all corners of the earth, where our armed forces and those of the United

Nations are in action.

"A strong, healthy merchant marine has proved its value in time of emergency and war; it is just as vital to the welfare and prosperity of this country in time of peace. This nation should always have a merchant marine built, owned and manned by Americans—a merchant marine second to none. Meanwhile, and until the last shot is fired, the steamship industry will not spare itself in its efforts to speed the prosecution of the war.

"I would like to say America's steam-

ship companies are proud of the valiant officers and men who are keeping the ships sailing through every hazard and peril presented by the war on the seven seas. The industry has made an initial contribution of more than one million dollars to the United Seamen's Service in order that these seamen can have the human and vital treatment they so richly deserve. We are happy that U.S.S. gives us an opportunity to express our deep appreciation. We, of the industry, were certain our men would continue the glorious traditions of the American Merchant Marine, and it is gratifying to see that the public has recognized the important and magnificent job that is being done."

Private Shipyards Build the Navy

F THE 697 NAVAL

ships under construction before Pearl Harbor, fully 603 were being built in privately-owned shipyards, according to the National Council of American Shipbuilders.

The reliance of the Government on established, privately-owned yards to produce the bulk and strength of its Navy dates back to 1794 when Congress authorized the construction of six frigates to suppress the Barbary pirates, the first ships of our American Navy.

In the long and honorable list of our Navy's ships built in privately-owned shipyards are the Bon Homme Richard, Constitution, Constellation, Alabama, Lexing-

ton, Wasp and Hornet.

Only in periods of national emergency, however, has this Government awarded more than half of its Navy construction program to privately-owned shipyards. In one five-year period, for example, the private yards of Great Britain built 5400 tons of Navy ships for every thousand tons of U. S. Navy craft built in American privately-owned shipyards.

In the present national emergency, privately - owned shipyards, in addition to building ships of every classification, have created miracles of production on the Navy program, many of the craft being delivered long in advance of dates established by the

Navy.

A Notable Fifth Anniversary

OMMEMORATING the fifth anniversary of its founding, the United States Merchant Marine Cadet Corps at its training schools throughout the country paid tribute to 63 cadet-midshipmen who have been killed at sea during the past year as a result of enemy

A special religious service honoring these valiant young men was held March 15 at the Merchant Marine Academy, Long Island Sound, New York, and similar serv ices were conducted at basic training schools at San Mateo, California, and at

Pass Christian, Mississippi.

In Washington, Cadet-Midshipman William N. Thomas, Jr. was presented with the Merchant Marine Distinguished Serv ice Medal for heroic and self-sacrificing conduct. The award was made by Captain Edward Macauley, a member of the Maritime Commission. Also the Merchant Marine Distinguished Service Medal was awarded posthumously to another cadetmidshipman, Edward O'Hara. The medal was presented to O'Hara's mother at her home in Lindsay, California.

The official citation of Thomas' heroic

action follows:

The President of the United States takes pleasure in presenting the MERCHANT MARINE DISTINGUISHED SERVICE MEDAL to

WILLIAM M. THOMAS, JR., CADET-MIDSHIPMAN (E)

CITATION:

For extraordnary heroism above and be-

yond the line of duty.

The ship upon which he was serving was loaded in all holds with highly explosive war materiel when attacked by torpedo and shell fire from an enemy submarine. The torpedo struck amidship, demolishing the engine and rupturing all steam and fuel pipes. The engineer and fireman on watch met immediate death. An oiler, blown to the top of the cylinder heads, lay helpless as a result of multiple wounds. Hearing his cries, Thomas descended into the darkness of the steam-filled wreckage and carried the injured man to the deck. By this time all undamaged lifeboats were away. Launching a small balsa liferaft, he succeeded in getting the wounded man over the side and lashed him securely to the raft. Thomas

then swam alongside the raft for about twenty hours until they were picked up by a rescue ship.

His magnificent courage and disregard of his own safety in saving the life of his shipmate constitute a degree of heroism which will be an enduring inspiration to seamen of the United States merchant marine everywhere.

> For the President (Signed) EMORY SCOTT LAND, Chairman.

United States Maritime Commission.

The Merchant Marine Cadet Corps in rounding out five years of achievement has contributed many excellent officers to the merchant marine. The complement of the Cadet Corps has been increased from 445 to 5200, and the average number in training during the past 14 months was 2410, of whom 993 were at schools and the remaining 1417 were training aboard merchant vessels. 238 cadet-midshipmen have served on various merchant vessels when sunk by enemy action.

Navy Wants Communications Officers

diate demand for more communications officers, the Navy has announced that men without experience in radio or electronics. but who have other engineering training, may now qualify for commissions in this

Men between 20 and 35 with degrees in any of the following may now qualify for communications duty: Agricultural Engineering, Ceramic Engineering, Chemical Engineering, General Engineering, Metallurgical Engineering, Mining or Petroleum Engineering, and Chemistry. Applicants, who will be given special training, must meet standard physical requirements and possess minimum vision of 15/20.

Announcing the broadened requirements for commissions as communications officers, the Naval Officer Procurement Office at 703 Market Street in San Francisco, stressed that men experienced in radio and electronics are still sought for this service. Many physical disabilities and vision requirements will be waived for men with adequate experience in this field.



Two New Geared-Turbine Tankers

MRS. R. C. STONER christens one for her husband at the yard of the Sun Shipbuilding and Dry Dock Company, Chester, Pa.





ABOVE: This view of one of the tankers at the outfitting dock gives a good impression of fine welding and of great size of hull.

LEFT: Its bow proudly pointed upward, the R. C. Stoner is awaiting the christening ceremony, anxiously desirous of getting its first feel of water. STANDARD OIL CO.

OF CALIFORNIA

GETS ITS LARGEST

AMERICAN-BUILT

TANKERS FROM SUN



S.S. J. H. TUTTLE prior to launching at Sun Yard, Chester, Pa.

HE STANDARD Oil Company of California are currently taking delivery of two large new tankers from the Sun Shipbuilding and Dry Dock Company of Chester Pa. These shipsbuilder's Hulls No. 238 and No. 239—were christened respectively I. H. Tuttle and R. C. Stoner and sponsored by the wives of those gentlemen. They are notable in being the largest tankers built to Standard Oil of California specifications and in being all welded. The principal characteristics of the ships are given in the table herewith.

Of the usual American poopbridge-forecastle type with raked stem and cruiser stern, these hulls have a continuous steel upper deck. Poop, boat, bridge and forecastle decks are all steel.

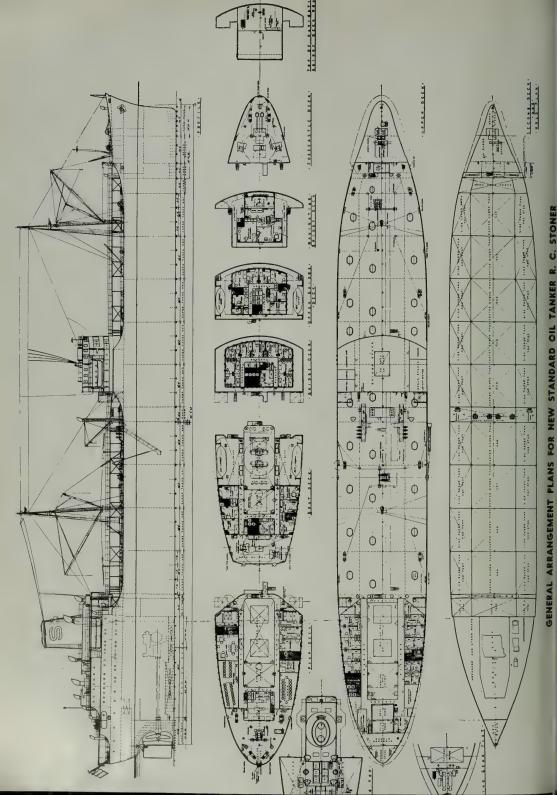
The hulls are built on the Isherwood longitudinal framing system, and are of electric arc welded construction throughout.

Two continuous longitudinal bulkheads and 14 transverse bulkheads divide the oil cargo space into 28 cargo tanks, two cofferdams, a cargo pump room, and three fuel oil tanks.

Machinery

Propulsion machinery comprises two Babcock and Wilcox water-tube boilers, with a total heating surface of 14,184 square feet, which supply steam at 450 psi and 750°F. to a General Electric double-reduction-gear, cross-compound steam turbine. This turbine, when the hp unit is turning 6525 rpm and the lp unit is turning 3780 rpm, delivers 8200 shp at 97 rpm to the propeller shaft. The propeller is 20 feet in diameter with 17 feet pitch, and at 97 rpm drives the fully loaded hull at 15.5 knots sea speed. This plant is capable of maintaining an output of 9000 shp corresponding to 100 rpm of the propeller. The main condenser is of the Ingersoll-Rand two-pass radial flow type with approximately 10,000 square feet of cooling surface. It is arranged athwartships directly below and connected with the low-pressure turbine. This condenser will handle 70,060 pounds of exhaust steam per hour and maintain a vacuum of 28 inches Hg when the tubes are 85 per cent clean and are served with cooling water at 83° F. Double-tinned admiralty mixture, 3/4" diameter, #16 BWG tubes packed at both ends with Crane packing are used. This condenser is supplied with cooling water by an Ingersoll-Rand vertical, double suction centrifugal pump driven by a 150 hp Westinghouse motor and having a capacity for 14,000 gpm against a 30-foot head.

A hot well is fitted to the condenser, and a vertical Ingersoll-Rand centrifugal pump driven by a 20-hp Westinghouse motor takes its suction from this well and drives the condensate through two stages of heating to a deaerating heater, which acts also as a positive head suction well for the main feed pump. The feed pump delivers feed to the boiler at 300°F. The two main feed pumps are multistage, turbine-drive, Ingersoll-Rand centrifugals, each having a



capacity of 200 gpm at 575 psi. The auxiliary feed pump is an Ingersoll Rand vertical simplex double-acting steam pump 12" x 8" x 24" with a capacity for 180 gpm at 575 psi.

The boiler room is on upper deck with the boilers arranged fore and aft, the after boiler being directly above the turbine.

These boilers are equipped with Diamond soot blowers, Wager smoke indicators, CO2 indicators. Reliance Eve Hve remote water level indicators, and all the required gage glasses, and safety valves. Bailey, thermo-hydraulic feed water regulators, combustion control, and draft controls are fitted. Two American Blower Company motor - driven forced draft fans are used, fitted with an arrangement of ducts and dampers so that one or both fans can be used on both boilers, and either fan may serve when only one boiler is in use. These dampers are subject to either manual or automatic control.

For electric light and power, two Westinghouse geared steam turbine generating sets of 300 kw each and a 50-kw diesel generating set are installed.

Cargo Pumps and Piping

For pumping cargo, each of these tankers is equipped with four main pumps and two strippers, having a total capacity of 18,000 bbls. an hour. The four main cargo pumps are Ingersoll-Rand steam turbine-drive centrifugals, each with a capacity of 2800 gpm at 115 lbs. pressure, or approximately 16,000 barrels an hour. The strippers are vertical direct-drive, reciprocating steam pumps of approximately 1000 barrels an hour capacity. This tanker can discharge her full load in less than 10 hours.

Cargo piping is arranged so that any tank space may be pumped without disturbing the other tanks. The cargo discharge line on deck is fitted with a Shand and Jurs gas exhauster. The main suction pipe is 12" in diameter, connected to pump suctions through 10-inch branches. The stripper suction is of 8-inch-diameter pipe

PRINCIPAL CHARACTERISTICS

Length, overall	547' 23/4"
Length, between perpendiculars	521′ 0″
Length, L. W. L.	531′ 51/2″
Beam	70′0″
Depth	40' 0"
Designed draft, loaded (MId.)	30′ 1″
Camber all-weather decks 1/4" per ft. of bread	th 17"
Train speed at summer draft	
International summer load line draft	30' 41/2"
Corresponding deadweight	

ESTIMATED CAPACITIES

(100% Full)

Cargo capacity, tanks #1 to 9, inclusive Deep tank, frames 43 to 44 (tank 1-A) Fwd. reserve bunker	152,595 bbls. 4,245 bbls. 2,620 bbls.
Main bunker aft	6,600 bbls. 200 tons
Culinary fresh water tank aft	

PROPULSION MACHINERY

S. H. P. (normal)	8,200	
S. H. P. (maximum)	9,000	
Number of screws	1	
Shaft R.P.M. at 8200 S.H.P.	97	
Shaft R.P.M. at 9000 S.H.P.	100	
Steam pressure at throttle	435	lbs. Gage
Steam temperature at throttle	735	deg. F.
Condenser vacuum	28	$/_2$ inches Hg.

with six-inch branches to the pumps. Both of these lines are respectively connected to 12-inch and 8-inch cargo-filling lines, having deck T head fittings for shore line connection. These deck connections are located over cargo tanks No. 1 and No. 9.

There are four 12-inch discharge headers, with 12" to 8" reducers for hose connection and two 6" stripper discharge headers, located port and starboard at the pump room casing. One 10" discharge line is installed and arranged so that any or all pumps can discharge over the stern. This line has a 10" x 8" reducer at its after end for hose connection. A davit and winch is fitted at the after end of poop for handling a four-ton cargo hose.

Fire Prevention

The Standard Oil of California flue-gas system is installed. This system consists of a steam turbine-drive gas blower that takes flue gas from the uptakes of the boilers, blows it through a cooler and washer into the cargo vent system, and with connection also into the cargo suction piping system. The object of this system is to keep all ullage spaces in cargo tanks filled with inert gas that will not support either explosion or combustion. Arrangement of piping is such that the system can be operated by vacuum by-passing the blower.

Shand and Jurs marine type float gages are installed in all cargo tanks. Each cargo hatch coaming is connected through a



THE SPONSOR AND THE BUILDER

Mrs. R. C. Stoner (center), wife of vice president of Standard Oil Company of California, and to her left, Robert Haig, vice president, Sun Shipbuilding and Dry Dock Company.

four-inch vent pipe to a Shand and Jurs pressure vacuum valve. Each of these valves is connected to a 10" header which is led up the nearest mast and terminates in a Shand and Jurs flame arrester. Mercro Nordstrom lubricated plug valves are used on this vent system.

In addition to this flue-gas system each cargo tank is covered by

a steam smothering line taking steam from the 150 psi auxiliary steam lines. This system covers also the dry cargo spaces, paint and lamp locker, and forward pump room. A 6" fire main with suitable hydrants and hose covers the whole ship and is served by two powerful pumps.

The machinery spaces are further protected by a C-O-Two sys-

J. H. TUTTLE, vice president and treasurer on Standard of California's board of directors, and Mrs. Tuttle, who sponsored the S.S. J. H. Tuttle.

tem capable of completely flooding the engine and boiler room bilges.

A complete Butterworth tankcleaning system is installed with connections and fittings that will apply thorough hot salt water washing to any cargo oil tank.

Accommodations

As in all Standard Oil of California tankers, the quarters for officers and crew are commodious, comfortable and convenient, with adequate equipment and furnishings to make life at sea the equal of that at first-class hotels ashore.

On the upper deck level, under the poop, are housed: 18 wipers, oilers, firemen and messboys, two in a room; the refrigerating machinery and cold rooms; the steward's stores; the butcher shop; the laundry; crew's showers and tollets; the hospital; the engineer's laboratory; and baggage and storage rooms.

Quarters for cooks, messboys and Navy gunners are arranged on the poop deck, which provides generous space also for the galley, officer's mess, crew's mess, and Navy mess. On the boat deck alone are spacious rooms for the engineering officers and the steward. The chief has a fine suite with stateroom office and private bath. First Assistant rates a room and private bath.

The midship house has three decks above the upper deck. On the navigation bridge deck are the wheel house, chart room, and captain's suite. Next below is the upper bridge deck which gives space for the 1st mate's room with private bath; rooms for the 2nd and 3rd mates with communicating bath; individual rooms for the 4th mate, an ensign and the radio operator; the radio room and the ship's office. Below again on the bridge deck are ten rooms, housing 12 seamen, 10 gunners, 4 cadets, a boatswain and a pump man.

All of these quarters are finished in fireproof paneling installed by Hopeman Brothers and painted in pleasing pastel shades that are easy on the eye and easy to keep clean.



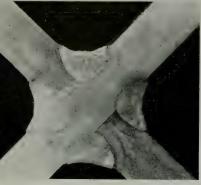
REPRESENTATIVES OF STANDARD OIL CO. OF CALIFORNIA at the sponsor's party following the launch of the tanker R. C. Stoner. Mrs. Stoner, the sponsor, sits in center of front row with large bouquet. Standing directly back of her chair is C. H. Robertson, assistant manager of Marine Department.

MACHINERY AND EQUIPMENT

Propulsion turbines	
Main reduction gears	
1-Main condenser-two pass	
1-Cross-compound turbine and double	
unit	
1—Main air ejector	
1—Auxiliary condenser	
1—Auxiliary air ejector	
1-General service, ball and bilge pump	
2—Main condensate pumps	
1-Portable (drinking) water pump	
1-Wash water pump	Worthington
1-General service, ball and bilge pump	
2—Evaporator feed pumps	
1—Fire & Butterworth pump	Ingersoll-Kana
1—Auxiliary feed pump.	
1—Auxiliary condensate pump	
1—Auxiliary circulating pump	
1—Sanitary circulating pump	
1—Main circulating pump	
1—For'd P. R. bilge and ballast pump	
1—Fresh water transfer pump	National Transit
1—Auxiliary diesel generating set	National Transit
1—Desuperheater	
1—2nd-stage feed water heater	Ross Heater
1—Deaererating feed water heater	Cochrane
1—2nd-stage heater drainer	
2—Evaporators	
2—Distillers	
1—Gland seal ejector	Foster-Wheeler
1—Drain cooler	
2—Refrigerating units	
1—Refrigerating condensate circulating	water numn
	Micro Westco.
1—Lathe	Nebel
1—Drill press	
1—Grinder	Cincinneti
2—Whistles	
1—Steering gear	an Engineering Co.

1-Windlass-triple spur gearAmer	rican Engineering Co.
4-Mooring winchesAmer	rican Engineering Co.
3-Mooring winches Amer	rican Engineering Co.
2—Main boilers	
Superheaters	Babcock & Wilcox
Air heaters	Babcock & Wilcox
8—Oil burners	Rabcock & Wilcox
18—Soot blowers	
2-Fuel oil service pumps	
1-Eng. Rm. fuel oil trans. pump	
1-Auxiliary F. O. service & trans. pur	
1-For'd P. R. fuel oil trans, pump	
1-Hand fuel oil pressure pump	
2—Fuel oil heaters	Davis
1-Condensate cooler for fuel oil her	ater Davis
2—Forced draft blowers	
1.—Draw nump and receiver	Micro-Westen
	(Pomona Pump Co.)
1—Injector	onsolidated Ashcroft
1-Feed water grease extractor	Davis
1-Ship's service air compressor	Ingersoll-Rand
1-Steam driven air compressor	Westinghouse
1-Air cooler for compressed air	
2-Lubricating oil service pumps	Quimby
1-Hand lubricating oil service pump.	Gould's
1-Lubricating oil storage tank filling	pumpUnion Steam
1-Lubricating oil purifier	Sharples
2—Lubricating oil coolers	Condenser Service
1-Lubricating oil purifier heater	Davis
1—Flue-gas blower	Roots-Connerville
4-Main cargo pumps	Ingersoll-Rand
2—Cargo stripping pumps	National Transit
1-Pump room bilge pump	National Transit
1-Butterworth salt water heaterRo	
1-Drain cooler for Butterworth heat	er
	ss Heater & Mfg. Co.
2-6" steam jet ejectors for flue gas	
2—Turbo-generator sets	Westinghouse
2-Motor generating sets	
Auxiliary motors and electrical eq	
•	Westinghouse





AN INEXPERIENCED GIRL made this after only four minutes of instruction.

EEP PENETRATing welds wherein the base metal is fused well below the surface of the joint are quite common, especially in the "submerged arc" process commonly known as Unionmelt welding. In fact, at Calship butt welds in plate up to 3/4" thick are made without beveling the edges. The weld is fused at least half the plate thickness from the first side, and the process repeated on the second side to obtain complete penetration of the joint. This process requires very much less "fillet" metal than for grooved joints since a large portion of the fusion zone is supplied by melting the base metal.

The use of deep penetrating weld for fillets likewise saves on welding rod but the deep penetrating weld will not measure up to specified gage size as determined by all recognized standards of inspection.

These tests were made for several reasons. First, it was desired to confirm the "Fleet Fillet" procedure for our own information and for the benefit of the local inspection services of the American Bureau of Shipping and the Mari-

Shipbuilder And

A CLEARING HOUSE FOR IDEAS ON THE WAR-WINNING JOB OF WHOLESALE PRO-DUCTION OF SKILL IN THE MARITIME CRAFTS

Deep Fillet

WELDING TECHNIQUE AND APPLICATION

This article is based on a report on tests conducted by the Welding Engineering Department of the California Shipbuilding Corporation for the purpose of studying the Fleet Fillet welding technique proposed by the Lincoln Electric Company and recently approved by the American Bureau of Shipping.

The experiments were under the supervision of and the report prepared by:

- M. H. MacKUSICK, welding engineer;
- J. B. HIATT, mechanical engineer; and
- R. V. ANDERSON, engineer in charge, Testing Laboratory, at California Shipbuilding Corporation.

time Commission. Second, it was necessary to determine in advance, insofar as possible, the difficulties to be encountered in actual production. Third, it was hoped that some information might be gained which would result in further improvements.

Equipment

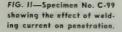
The equipment used in making the sample welds was selected from and representative of welding equipment used throughout the yard. For alternating current a heavy-duty Hollup 500-ampere (rated) welding transformer was used, and for direct-current tests a 300-ampere Lincoln Shield Arc welding generator was employed. These machines were set up in a small room adjoining the testing laboratory especially for experimental purposes.

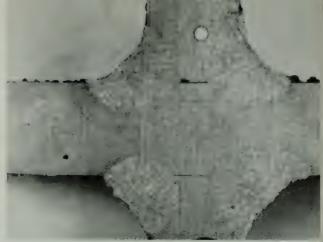
Material

All welding specimens were made up on cross sections prepared by tacking two 5" stiffeners on either side of a 10" plate. The length of the assembly was 24". These stiffeners were centered on the 10" plate and lined up carefully to reduce bending stresses to a minimum during the tension test. These assemblies supported themselves for welding in the flat position, or were supported in a jig for welding in the horizontal position.

The electrodes used for these tests were of the American Welding Society Specification E-6030.

Seaman Training





The majority of the specimens were made with ½" Fleetweld 11; but tests were made for comparative purposes with 3-16", "4" and 5-16" Fleetweld 9 and 3/16" and 7/32" Westinghouse DH.

General Procedure

Single-pass welds were made on ither side of each stiffener. Samble welds were made in both the lat and horizontal positions using diternating current. Welds were made in the same manner with lirect current but in the flat position only. Welding operators for these tests were selected from the plate shop and subassemblies.

The plates were laid out with soapstone markings at intervals equivalent to 15 second's welding time. For example, for a weld made at a travel speed of 12 inches per minute, the plate was laid out in four segments, each three inches long. This enabled the operator to check his speed at each fifteen-second interval. All welds were run for an interval of one

minute except those run at speeds in excess of 20 inches per minute, in which case the plates used were not long enough to accommodate a weld of one-minute duration so a shorter time interval was used. The plate thickness used was variable. The size was selected in an effort to cause failure in the weld during the tension test.

Data noted at the time of welding included type of current, open circuit voltage, machine setting of current, presence and number of cracked fillets, electrode and size, travel speed, angle of electrode, and electrode burn-off rate.

Two test specimens 112 inches wide were machine cut from each sample. One was cut down to 3x3 inches, ground, polished and etched for macro-structure. The other specimen was lightly etched without edge preparation and measurements of weld size and pentration taken as indicated in Figure I. Minimum dimensions of the plate in this specimen were determined and a tension test applied until failure resulted. The location of the failure (plate or weld) was noted and record was kept of imperfections in the weld.

Initial Tests

A large number of initial test specimens were made up using 3/16" Fleetweld 9, 7/32" Westinghouse DH, and ½" Fleetweld 11 in the flat position to determine the limiting rate of travel. Alternating current was used exclusively for these tests at both 80

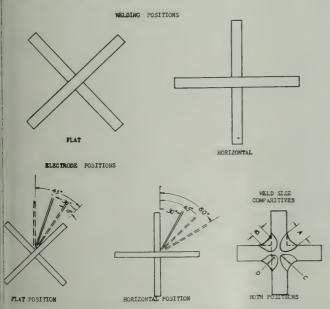


FIG. I—DIAGRAM of test procedure showing positions of work and electrodes, and the location of weld size measurements.

and 100 volts open circuit with little regard for current setting,the current being adjusted as necessary to maintain good penetration and high fluidity. Travel speeds were taken over a range from 12 to 24 inches per minute. At this time certain specimens were made to cover particular conditions. Attention is called to Specimen No. C-99 (Fig. II) in which the four fillets were made at different currents to show the effect of current on penetration, soundness, and appearance.

On the last seventeen tests the electrode burn-off was recorded as a basis for establishing proper current. From these tests the following procedure table was made up. A portion of Table IV from the paper on Fleet Fillet Welding Technique published by the Lincoln Electric Company is shown for comparison (Fig. III):

Confirmation Tests

The remaining test specimens were made on the basis of the Fig. III table for the purpose of confirming it. Two sets of specimens were welded in the flat position; one with alternating and one with direct current. Both ac and dc tests were made at a travel speed of 12" per minute and with an electrode angle of 30° from the plate. Electrodes used were 3/16" and 5/16" Fleetweld 9, and 1/4" Fleetweld 11. For comparative purposes two specimens were made with ½" fillets welded according to conventional techniques. With 5/16" Fleetweld 9 at five inches per minute and 1/4"

	ELECTRI	

		- · · · · · · · · · · · · · · · · · · ·		
Burn-Off		Arc	Electrode	Ultimate
Rate	Current	Speed	Size	Strength
In./Min.	Amps.	In./Min.	In.	Lbs./In.
9	250	13	1/4	15,000
9	250	13	1/4	18,750
9 3/4	275	13	1/4	22,500
12 1/2	350	13	1/4	30,000
	Rate In./Min. 9 9 9 3/4	Rate Current In./Min. Amps. 9 250 9 250 9 3/4 275	Rate Current Speed In./Min. Amps. In./Min. 9 250 13 9 250 13 9 3/4 275 13	Rate Current Speed Size In./Min. Amps. In./Min. In. 9 250 13 1/4 9 250 13 1/4 9 3/4 275 13 1/4

Prawing Fillet Size In. 3/16 1/4	Current Amps. 150 200	Electrode Size In. 3/16 3/16-7/32	Arc Speed In./Min. 11-13	Burn-Off Rate In. 11 1/2 3/16-15	Ultimate Strength A.W.S. Lb./In. 15,500
5/16	275	7/32-1/4	11-13	7/32-11 1/2 7/32-13	20,500
3/8	325	1/4	11-13	1/4-10 11 1/2	25,000 29,000

FIG. III-Portion of proposed table for single pass fillet welds in downhand position using A.W.S. Type 6030 electrodes (10-14-42) compared with Lincoln Electric Company's table for Fleet Fillet welding technique.

Fleetweld 9 at four inches per minute.

One additional set of specimens was welded with alternating current in the horizontal position, using a travel of 10" per minute, and with the angle of electrode at 30° measured from stiffener. This actually directs the arc into the plate rather than into the joint, but the change is necessary to prevent undercutting of the vertical mem-

Two test specimens were cut from each of these sample welds. One of these was ground, polished, and etched for macro-structure: the other was tested in tension to failure.

Current and Weld Strength

Figure II shows the relationship between the strength of deep fillet welds and the current used to produce them measured in terms of the burn-off rate of electrode. Superimposed upon the scale of strength of joint is shown the scale of conventional fillet weld sizes corresponding to this strength, taken from Navy specifications as quoted in the Welding Handbook (American Welding Society 1942). These curves show the proper current selection to produce deep fillet welds equivalent to the conventional fillets of the size shown. These curves cover the following conditions:

1. Flat Position

- a. Alternating current
 - 1. 3/16" electrode
 - 2. ¼" electrode
 - 3. 5/16" electrode
- b. Direct current
 - 1. 1/4" electrode

2. Horizontal Position

- - a. Alternating current
 - 1. 3/16" electrode
 - 2. ¼" electrode

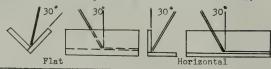
Figure V shows the approxi-

mate relationship between burnoff rate of electrode and the welding current in amperes. Here note that these currents are actual welding currents and not machine

Table and diagram showing adopted procedures.

California Shipbuilding Corporation

Procedure for Deep Fillet Welding Technique, Down Hand Position using A.W.S. E-6030 heavy all-mineral coated electrodes.



FIRC			norizontai			
	Drawing	Electrode	Recommend	ed	Electrode Burn	
	Fillet Size	Size	Travel Sp	eed	Off Rate	
	inches	inches	Flat Ho	riz.	inches/ minute	
	3/16	3/16	12	10	11 1/2	
	1/4	3/16	12	10	15	
	5/16	1/4	12	10	10	
	3/8	1/4	12	10	11 1/2	
	7/16 1/2	1/4		10	12 1/2	
		1/4	12	10	14	
	1/2	5/16	12	10	12	

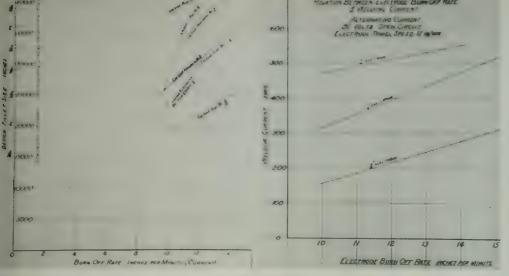


FIG. IV—Curves showing relation of strength and size to burn-off rate of electrode (current).

FIG. V — Curves showing approximate relationship of current to burn-off rate for various sizes of electrodes.

settings. When applying this proredure, the welding current should always be adjusted by checking the burn-off rate of electrode.

In addition to their value in seecting the proper current for a weld of given strength, these curves indicate that: alternating current gave a weld of superior trength to direct current for the same burn-off rate and electrode ize; and alternating-current welds showed a greater range of application for a given set of conlitions within the limits of mahine capacity. The slope of the curve of the Lincoln Electric 'ompany's recommendations ould not be reproduced with the lirect-current equipment availible in this yard. However, this loes not mean that the available le equipment is not suited to this echnique. The tests show that good results are obtainable for illet sizes corresponding to 5/16" and 3/8" design size.

Adopted Procedure

With very few exceptions, these ests show that the strengths of 'deep fillets' made according to he procedure table shown in Figure III are in excess of design requirements. This would indicate hat by further investigations it night be possible to make additional savings in electrodes and

man-hours by slight increases in arc speed, or savings in power consumption by decreases in welding currents. However, since the proposed table (Fig. III) was based largely on American Bureau of Shipping and United States Maritime Commission approval of technique and procedure, it seemed advisable not to alter the procedure, but to use the additional strength as a safety factor against the possibility of irregular production work.

The electrode angles were established for the flat position as 30° from the plate and 30° leading from the vertical. This arrangement assures maximum penetration into the joint and keeps the molten pool away from the arc at the adopted 12" per minute travel speed. The same lead angle was adopted for the horizontal position, but the angle with the plate was changed to 60° to eliminate undercut in the vertical member.

Qualification of Welding Operators

"Welding operators shall be certified to use the deep fillet welding technique (Lincoln Electric Company's 'Fleet Fillet' technique) as follows:

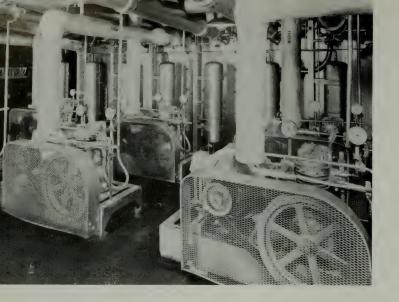
"Welding operators shall be given instructions in technique of deep fillet welding by competent instructors and shall deposit on a test sample a deep fillet weld of predetermined size. Weld sample shall be macro-etched on a cross section, and weld must measure with at least the penetration that is required for selected size of weld. The appearance of the weld deposit must be sound and free from defects.

"Qualified welders shall be furnished with qualification cards signed by the testing engineer showing operator's name and badge number and indicating that he has been tested and qualified for deep fillet welding technique."

Before allowing each operator to take a qualification test, it is proposed to give as much preliminary instruction as may be found necessary. A sample board has been made up of the specimens made in the above tests on which specimens are laid out to show the effect of each variable. It is felt that this will be of value in demonstrating the procedure. Qualification of operators is now under way in an effort to have a supply of qualified men available at the time a sufficient supply of qualified electrode is available for continuous production.

The simplicity of the technique can reduce the training time to a fraction of that required for conventional technique. This was determined by making a flat fillet weld in the test laboratory by a person who had had no previous direct contact or experience with welding. The girl selected was

(Page 103, please)



TYPICAL SHIPBOARD INSTALLATION

Refrigerating machines used to supply cooling for storage of perishable foods.

by John F. Kooistra

Carrier Corporation Branch Manager San Francisco, Calif.

Air Conditioning

IN OUR WAR PROGRAM

ANY PEOPLE have had the impression that air conditioning was primarily a business of maintaining comfortable conditions in theaters, stores, offices and homes. Prior to 1941. comfort was the highly publicized part of the art of air conditioning, but was never an adequate description. For example, it would not be comfortable to stay in a room where the temperature is held at -70°, or in one where the temperature is held at 120° and 95 per cent relative humidity, yet such rooms are frequently air conditioned for a specific reason in industry. Air conditioning in our war program is, generally speaking, an industrial application and accepted as a necessity.

A brief background of temperature and humidity control of air is desirable before discussing its application to the war.

Practically all installations made between 1903 and 1920 were of an industrial nature made for the benefit of the material which was being manufactured or processed. Textiles, tobacco, chemicals, printing and lithography, confectionery, food products, and explosive plants were the most prominent users of air conditioning during that period. From 1920 to 1930, in addition to the industrial applications, an increasing number of comfort conditioning jobs were installed in theaters. stores and public buildings. From 1930 through 1940, great strides were made in the use of comfort air conditioning for railway cars, restaurants, small stores, individual offices and homes.

This was the period when the public became air-conditioning minded, but during the same period the air-conditioning engineer was also continuing to work with (to the public unknown) industries in connection with new synthetic products and scores of precision processes. This resulted in "air conditioning going to war in 1941." What is it doing then?

The answer is: "Many things that are essential to healthy fighting forces well equipped with fine tools of war."

War Uses

To enumerate the several scores of uses which rate high priorities, frequently the same as those applied for tanks, planes, ships and ammunition, would require much space. However, an idea of the importance of air conditioning as

a production tool can be obtained from an outline of the more important war applications of air conditioning and refrigeration.

No distinction is being made in this discussion between the terms "Air Conditioning" and "Refrig eration," as both refer to the conditioning of air regardless of application. The older term "Refrigeration" as applied to cold storage probably should be changed to "Low Temperature Air Conditioning," because it describes in better detail the function of the refrigeration equipment which is part of the overall conditioning plant. For the purpose of this article, however, we use the words "Air Conditioning" and "Refrigeration" interchangeably.

Food Supply

The all important service of food supply to soldiers and sailors means that large refrigerated storage compartments must be furnished on all fighting ships and merchant vessels. Thirty to forty per cent of the cargo space on ships built prior to 1942 was refrigerated for the carrying of perishable foodstuffs such as meats, dairy products, fruits and vegetables.

The new shipbuilding program has taxed the refrigeration and air conditioning equipment manufacturers' production lines. Thousands of ships are being built tolay and they all require ships' stores refrigeration for crew and troops, or cargo refrigeration for carrying large quantities of pershables to our fighting forces and to our allies. Cargo, as well as fighting ships, are greatly dependent on the proper maintenance of oodstuff on board. Marine refrigeration is, therefore, of the utmost mportance for the proper execution of our war effort.

Refrigerated cars and trucks are just as necessary for land transportation. All Army and Navy bases in the United States or abroad require refrigerated food storage rooms. One of Carrier's production lines is making several thousand sets of refrigeration

equipment for use in connection with large portable storage compartments for the Nayy.

Precision Manufacture

In the manufacturing of precision products there are a number of operations that require air conditioning or refrigeration as an essential to quality control, accurate workmanship and quantity production.

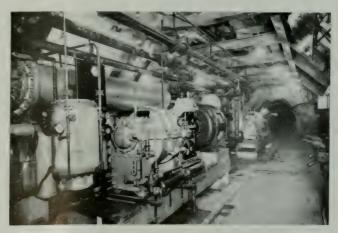
In the case of optical instruments, such as range finders. height finders, photographic lenses, and binoculars, the leading manufacturers such as Bausch and Lomb, Eastman Kodak, Sperry Gyroscope, Spencer Lens, and others find it necessary to condition air with emphasis on air cleanliness to eliminate damage by air-borne dirt, particularly that of an abrasive nature. Their "quality watchdogs" will holler if anything as big as one micron in diameter goes through the special (one-millionth of a meter) air filters. They also want to control the temperature of the working space to prevent uncontrolled expansion and contraction of either work or gages beyond the required tolerance of accuracy. They require control of relative humidity

to prevent excessive hand perspiration that mars surfaces and causes rust. They require cooling and ventilation to make habitable the near dust tight rooms where a large amount of heat is released from motors, lights and people.

The same reasons for air conditioning apply to the manufacture of all manner of precision instruments such as flying instruments, radio and communications equipment, gages, gun sights and the like. In addition to the requirements during manufacture, these instruments must be tested under the extreme of tropical conditions on the one hand, and the cold of high - altitude conditions on the other hand. This is to insure that instruments employed as in military planes to be flown at high altitudes will meet the critical requirements of operating conditions. This calls for test laboratories, testing rooms, or test chambers where great extremes of temperature, humidity, and air pressure can be attained.

Airplane Production

In the field of manufacture of airplane engines, airplane parts and in the blackout type of assembly plant, many of the largest air-



AIR CONDITIONING IN THE MAGMA COPPER MINES permits working at lower depth, where some of the richest veins have been found. Equipment located nearly one mile below surface.

conditioning systems in the world have been installed. Single installations in such plants are often forty to fifty times the size of the air-conditioning plant in a moderate size store.

The National Advisory Committee for Aeronautics (N.A.C.A.) wind tunnel for testing airplanes and airplane sub-assemblies is being supplied with refrigerating equipment which will stamp it as one of the largest refrigeration plants in the world.

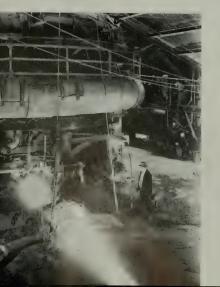
Mines and Metals

Other applications which have caught the production engineers' fancy are the applications of air conditioning to blast furnaces and to mine cooling.

It is a matter of record that the Woodward Iron Co. at Birmingham, Alabama, for example, has increased production as much as 20 per cent, reduced coke consumption as much as 13 per cent and has improved the quality of its iron by means of air-conditioning systems which remove many thousands of gallons of water per day from the air entering the blast furnaces.

Mines, such as the Magma Copper Mine in Arizona, have found it

CONDITIONING BLAST FURNACE AIR has effected increased production, savings in fuel, and greater uniformity in product.



possible to greatly step up the production and protect the health of the workers by the cooling and dehumidifying of the lower working levels, where have been found some of the richest veins. These areas could not be worked were it not for air conditioning.

Synthetics

Modern synthetics, such as one type of rubber, cannot be manufactured without the use of refrigeration, requiring temperatures of approximately —100° F. Nylon, rayon, certain plastics, powder, high octane gasoline, all require either refrigeration or air conditioning, or both.

Add to these the growing use of air conditioning for gun compartments on ships, control towers at air bases, bomb-proof message centers, field and camp hospital operating rooms, and a host of other applications, and the responsibilities of air conditioning as a tool for war can be realized. Consequently, personal discomfort at home must be acceptable to all while the air conditioning and refrigeration industry has gone to war. When Victory is won, air conditioning will be stronger than ever for peace-time service in the post-war period.

LITTLE SHIPS GET ENGINEERS' ATTENTION

UBMARINE TENDERS, mine sweepers, fleet tugs and escort ships get little attention from the general public. Nevertheless they play an important part in World War II. Escort ships built to accompany convoys have twin screws, each driven by two motors in tandem. The direct drive is an unusual feature with propellers designed for higher than normal speed and low-speed motors. Thus the usual gears are eliminated, which is important now that gearmanufacturing facilities are so heavily loaded. Ventilation is by recirculated air and water coolers, according to Westinghouse engineers. To save space the water coolers are mounted on top of the motor and air is drawn through the motor windings, over the commutator, through the coolers and back to the motor. Circulating the air in this direction keeps dust from the carbon brushes away from the commutator, where it is injurious to electrical insulation.

Several new fleet tugs use a double-armature dc motor to drive a single propeller. No gears are used, and contrary to custom, the armatures are placed on the shaft with the two commutators facing each other. Air from the windings

is drawn past the commutators, and is discharged to the deck. The new design effectively keeps carbon dust from doing any damage.

The new mine sweepers use multi-purpose electric generators. Formerly there were generators for propulsion and other generators for ordinary vessel functions. Now one set serves both, say Westinghouse experts. Each boat has four 715-kw, diesel-driven generators, and four 882-hp motors. Two motors are direct connected to each of two propeller shafts. The generators were specially built to specifications calling for small size, light weight, and the ability to operate at high temperature.

Powerful submarine tenders have an improved drive consisting of several diesel engines driving alternating current generators. These generators are all operated in parallel, which made it necessary to work out a method for starting and synchronizing different units without disturbance. Special attention was given to the damper windings and in this way torsional vibration was kept to a minimum and synchronizing was materially simplified.



BATTLESHIP U. S. S. WEST VIRGINIA, equipped with G. E. turbine-electric drive, en route to drydock for repairs after being raised at Pearl Harbor.

REPAIRS AT PEARL HARBOR

WO BATTLESHIPS. U.S.S. West Virginia and U.S.S. California, were so badly damaged by the "Nips'" sneak attack at Pearl Harbor that they sank to the harbor bottom and lay with their decks awash. To repair and recondition the electric propulsion machinery of these vessels, the General Electric Company dispatched to Hawaii 56 technicians under the leadership of Charles Edwin Wilson, veteran engineer. These men were gathered from various G. E. organizations and four of them, George A. Carroll, Charles H. Stegman, James W. Walton, William A. Stegeman, are among the personnel of the General Electric Apparatus Service Shop.

These men found the generators and motors of the ships covered by thick oil and muck and some of them badly corroded by salt water. As the apparatus was deep in the ships, everything taken in or out had to be carried by men walking single file on narrow companionways through four decks. Tons of materials were moved this way.

General Electric was the only private contractor with a crew working in the yard. The men worked in three shifts, 24 hours a day, seven days a week, in the holds, breathing air pumped from above decks. As a precaution against gas, at the beginning of the pob, the Navy provided chemically treated white ribbons which the men wore. Should the ribbons have turned purple, the workers would have to leave immediately.

Working space was cramped and techniques had to be improvised. In charge of the three shifts were Max A. Hinrichs, General Electric San Francisco office, who flew to Pearl Harbor to serve as Mr. Wilson's assistant; Jesse D. Gardner, also of San Francisco, whose experience included construction of the power plant at Stalingrad, Russia; and E. E. Carrier, who installed the street railway system in Batavia, Java. When Mr. Hinrichs became ill. his place was taken by Robert Haake, who rushed to Hawaii from Boulder Dam, where he was working on the installation of an 82,000-kilowatt generator.

Working under Mr. Wilson, 57 technicians, skilled armature winders, motor experts, and supervisors were summoned by telephone from all parts of the country and dispatched, some by plane, to Hawaii. The largest single group, 20 men from G.E.'s Schenectady headquarters, sped west in a special Pullman car. When his direction was needed on a special replacement problem, Howard Maxwell, managing engineer of the Induction Motor Department in Schenectady, left there Sunday afternoon; arrived at Pearl Harbor on Tuesday.

"IT WAS TOUGH, but it was worth it," declared G. E. technicians as they compare Navy "E" pins just awarded them for their work at Pearl Harbor. They are, left to right: George A. Carroll, William A. Stegeman, and Charles H. Stegeman.



Notes on . . .

MARINE MACHINERY INSTALLATION

by George K. Marple

Asst. Gen. Manager, New York Shipbuilding Corp.

NSTALLING propelling machinery in a modern ship today brings forth several problems that had not confronted us before.

First, we are confronted with a welded hull that refuses to stay put until a very large percentage of the ship is completely welded. Secondly, we must have in place all main machinery, auxiliary piping, etc., that will not pass through the regular access or portable plates at an early date and in some instances prior to the time the stern is ready to bore out.

In the first instance, the struts and stern tubes and castings can not be permanently fastened until the ship has ceased to change shape in the stern. In the second instance, the lower decks must be in place to permit the orderly fabrication of the ship and the installation of the auxiliaries or other equipment that must necessarily be installed or fabricated above these decks.

To follow the sequence through, the line shaft centers are located in the engine rooms from a drawing dimension and likewise at a point (drawing dimension) located aft of the struts. In the after position, a straight edge is fastened to the ground ways or some other position as long as there is no connection to the hull. At the time these straight edges are located, dimensions are taken by tram from the hull to the ground in close proximity to these straight edges. By this method a



GEORGE K. MARPLE

constant check can be kept of the amount the hull changes and when it stops moving. A line is stretched between these two points using an .018" steel wire and the standard sag methods taken from table shown.

Reduction gear, turbine, and steady bearing foundations are immediately started when deemed advisable and worked from this line. The foundations nearest the stern are the last ones to be built.

The amount the stern moves is greatly affected by weather condition and whether the ship is built under a covered way or in the open. From data taken on one ship, the amount of movement from the time the line is first put in place until ready to bore out varies from 1/8" to 3/8".

To install reduction gears and turbines to a definite location before the line shaft is set or stern tubes completely bored out is a departure from the old practice, but it has become absolutely necessary in order to maintain the present scheme of less time with no decrease in quality of installation

Regardless of the sequence of operations, when machinery is installed before launching, we always face the question of movement of the ship after the launching. When the ship is completely bored out, bushings and shafting installed, the steady bearings may be left in such a condition that the liners could be re-machined and the doweled or fitted bolts put in after couplings are as close as it is possible to achieve with both ends in a fixed position.

In machining the stern tube bushings, we have used a new type Hydro-Tel milling machine which uses a cutter of a definite size for the finish cut, and this guarantees that strips can be renewed at any time as long as they are made to drawing dimensions. This machine has an index head which has locked positions and gives an absolute dimension radially on all grooves. The bushing itself is set in a fixture which is absolutely parallel to the table, and this guarantees that the slots are parallel with the bore of the

strut. This not only makes a bet ter pob for size, location, and work manship, but has the very definite advantage of cutting the cost and time of these bushings by at least 50 per cent. With the present delivery of ships, which is greater than we have ever accomplished before, this one machine can more than furnish the sleeves needed.

There are many misconceptions of what the degree of accuracy of line shafting should be. Certainly, we should strive for the best job we can produce in the best possible time. However, there have been many times that there has been much valuable time lost arguing as to whether the shaft coupling should be .002 or .0025 of an inch at a given place when, if the same people had gone back to the same coupling several hours later, it would probably be much more than the questionable amount different from the previous check. Considering the long length of some shafts, the total length of one complete section of line shafting, which in many cases is close to 300', the loading of tanks and stores being considered and an accurate check taken of all couplings in a given line shaft, we would all be surprised and much less worried about some of the questions we have had to answer.

To go to the other extreme, we know from experience that once the main reduction gear of the locked train type is set, it is absolutely necessary to check the torque and alignment of these gears with very minute care. This type of gear should never be finally checked by any other than a specially trained man who knows in detail the design and requirements of the same.

It is quite possible to have a unit completely installed and not have all pinions and gears in their proper positions. Furthermore, if it becomes necessary to lift a pinion or gear out of one of these sets, it should always be checked by someone who has had sufficient experience to be sure that the pinions are in their proper

positions. Here again, it is alto gether possible that to the average engineer these pinions might seem to be in their proper positions after reinstallation and still not have the proper relative torque.

After the main turbines are finally set and steam pipes have been connected, these connections should be very carefully rechecked as there is always a chance of misalignment due to the heavy pipes necessitated by modern steam temperatures and pressures, the location of hangers, and the inability of the installing engineers to produce accurately the allow ances and strains required in the original design.

Another problem that has been brought about by modern machinery, and this seems to be the aftermath of putting more and more horsepower in less space, is the piping for the main injections and overboard discharges of the main condensers.

There was a time when the main injection and overboard dis-

charge was just another sea chest. Larger, of course, than many others, but a sea chest to be placed in the ship according to plan and then connected by piping to the condenser. It is highly essential that these pipes do not become missing links.

If the main engines are placed to a given dimension and the condenser is fastened to the L. P. turbine, the inlet and outlet head of the condenser is automatically set where the reduction gear or line shaft is set. Therefore, if these sea chests are set to dimensions without any relative check to the line shaft centers, trouble may result.

It is much safer to locate the inlet and outlet flanges of the condenser by target from dimension taken from the established line shaft centers in the engine room and from these recheck from center of sea chest or flange of chest before finally securing.

This method will take care of any inequalities that have resulted

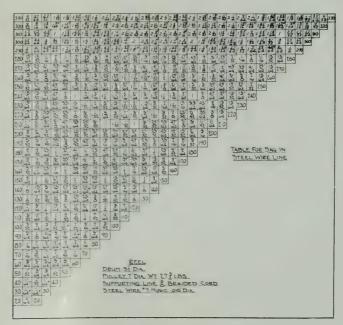


TABLE OF VALUES of sag used in lining up centers of bearings with a taut steel wire.

in the construction of the ship up to this time, and will insure a free flow of water and a much easier and better job of piping, particularly when the last fitting piece between the condenser and strainer, valve or what the design may require at this position, is installed.

Very often much time and effort can be saved in lining up smaller units such as windlass gears and power drives by using the base of these units as a face plate. The complete foundation can be built on the dock or in a shop where more space is available. While so doing, the foundation bolt holes are drilled and bolts put in place.

The unit and foundation is then lowered into place and after setting to proper plane is then scribed off with depth gage, or better still, burned off in place. After rechecking on setting, the foundation is then welded. If this is done uniformly, no distortion should take place and most of the time of fitting liners, which usually has to be done in restricted space, is saved.

In most cases, the base of these units serves as a better slab or face plate than can be secured under normal circumstances.

Much can be said about the alignment of turret and gun foundations. Where the foundations are rings welded directly to decks, or the foundations are not very high and are rigid, the concentricity and plane can usually be taken care of by using heavy plates and machining the excess.

More trouble is usually encountered in the larger and higher cylindrical turret foundations. One of the ideal ways to keep the roller paths concentric is to start at the very beginning of these foundations.

It is quite possible to build these foundations complete in the shop, fasten the roller path to the top one, and continue the orderly fabrication of the ship. Of course, the bottom sections are fastened first with less thought of the concentricity than in the case of the top sections. After the top sections are in place, it is highly important that the technique used have as a major requirement the welding of all deck and connections (except those to foundation) as completely as possible before any connection is made to the foundation. If this is accomplished, many of the headaches of eccentric turret foundations can be eliminated.

Once the roller path has been machined, the turret should be installed as soon as possible and any additional welding forbidden except by special permission.

This is best protected by having open days, that is, one or two days per week when after permission is given by a representative of the organization responsible for the alignment of the turrets, such welding as is deemed practicable may be accomplished.

During any of these operations, a competent man should be present to check the roller contacts on the face and diameter, and as soon as a movement is indicated, the welding can be stopped. It may be necessary to revert to rivets or even another method of fastening. Regardless of what has to be done in this case, an ounce of prevention is worth a pound of cure.

Paper read before Philadelphia Section Society of Naval Architects and Marine Engineers, Jan. 15, 1043

WAR SHIPPING IN THE PACIFIC AREA

by Vice Admiral J. W. Greenslade, U. S. N.

Commandant, Twelfth Naval District

N MARCH 17, BEfore a large and enthusiastic Propeller Club, Port of San Francisco,
luncheon audience, Admiral
Greenslade, after outlining the
logistic problems that complicate
our war efforts in the Pacific Area,
thus describes the contributions of
Pacific Ports and Pacific-American shipping towards the solution
of those problems. [Editorial
note.]

At San Francisco, and to a lesser extent at other mainland ports, are centered supply activities. These loading ports for personnel, supplies and materials constitute one set of termini. The other termini are in the theaters of war - the South and Southwest Pacific. I believe that our West Coast ports are, and can be in time, adequately developed to cope with the flow of supplies. It is at our out-ports that the difficulty lies. For it follows, almost without saying, that to have an even flow of shipping, terminal facilities in the distant Pacific should be commensurate with those in kindred usage here on the West Coast.

But it seems utterly impracticable at the present stage of the war effort to build up the outbases on such a scale by conventional engineering methods. It is here new ideas as to the construction of wharves, storehouses and floating store ships must come into play. When the theaters of war move, then the terminal equipment must be sufficiently mobile to be moved promptly to the next port close behind the firing line. Until some such setup is completed, orderly shipping is out of the question. Some congestion of ships at these out-bases is inevitable. Particularly, as the tide of war advances from Australia, New Zealand and New Hebrides, the use of undeveloped ports will continue to an increasing degree.

Under such conditions, orderly management of shipping cannot be expected as it is understood by steamship line operators. If supplies cannot be kept in storehouses ashore, they must necessarily be held in ships until required.

Holding ships is an evil, I appreciate, but it is a lesser evil than

being deprived of critical supplies. It is this different that marks the difference between the concept of shipping for war purposes and that of normal steamship operation.

There has been much discussion concerning this phase of the logis tic situation in the theaters of war. rated. And the entry into the field. of discussion of all interested parties is producing great improvement. I feel confident that a full review will indicate that this part of the war effort is now well in hand, with minor defects being corrected without unnecessary delay. Capable officers on the ground are using much ingenuity in handling supplies, not only on a day-to-day basis, but on the basis of the whole campaign.

It is of interest to note that our enemies are equally or more embarrassed by this need to hold supplies available in cargo ships. For on the same day a few weeks ago, when he had forty-three cargo ships in our principal advance base, secure from bombing, the Japs had in Rabaul—as shown by photographs-fifty-nine large and medium cargo vessels, subject to almost daily bombing. They had been in occupation of that base long before we moved into the Southwest Pacific area, and, needless to say, those ships would not have been there if not required.

In December, several times as much cargo was unloaded in our out-ports as in the preceding month. The present system and the general supply plan are approaching adequacy to meet fully the requirements of the theater commanders. Improvements are always in order, naturally, but radical changes are always attended by interruptions and the possibility of disastrous delays.

Here in San Francisco, I am happy to say that the Army, Navy and War Shipping Administration groups have formed themselves into a close cooperative alliance so that no element of efficient operation may be neglected

As a fine funite on cooperation, I should like to add that an excellent supply objective been set up whereby the X-sy and the Army are in partnership, each supplying some common essential. Thus food is supplied by the Army, and fuel by the Navy.

Some harson in the carrage of freight can and very possibly may be arranged. It is a Navy practice that all ships leave loaded, but on occasions priority freight of the Army has been put on board Navy-controlled shipping. A similar service has been made available by the Army to the Navy. It was proposed some time ago that this liaison method formerly carried on informally could be established in a formal plan, and steps are now well under way with this end in view.

Beyond these items, it is rather difficult to bring the Army and Navy together in a common and joint supply plan. Because of the difference in their requirements, it would appear that supplies can not be reduced to a common denominator. The number of troops constitutes the common denominator for the Army, while that for the Navv is the tonnage and character of combatant ships. The location of main advance bases and of minor support points is another variable requiring great mobility and making a completely integrated or coordinated system impossible.

In the basic matter of ship procurement, the Navy functions by means of vessels owned outright, by bareboat charter and time charter. The ownership of chartered vessels usually resides in the War Shipping Administration; but some foreign vessels, such as the Dutch and the Danish, are chartered by the War Shipping Administration and are treated on the same basis as American flag ships.

The allocation of ships is negotrated both in Washington and lohave been made, they are reported to Washington for approval. Ohviously, there will arise occasions when the Army and Navy and British Ministry of War Trans arises, the War Shipping Administration in Washington, or somefor the conflicting demands. Representatives of the Army, the Navy and the War Shipping Administration now meet regularly to work out such allocations mutually. Rarely has the Navy, lo cally, felt that a vital interest arising out of the war effort has the War Shipping Administration.

I am pleased to emphasize the gratifying fact that at the present time all agencies, both military and civilian, centering in this area are working in effective harmony and cooperation. If there has been any misapprehension on that point, this summation should make the record clear. This satisfying situation strongly supports a concept of command that I have always held: That full and honest cooperation is as important in unity as is absolute authority.

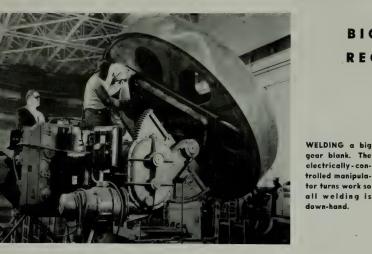
In conclusion, allow me to say that we of the Navy hold the American merchant marine in high regard. We have levied upon it for ideas, for vital assistance and for personnel. Its continuance in robust and aggressive health when peace returns will be essential both in the interests of national policy and national prosperity. And in furtherance of this continuance, I feel that every effort should be made during the war period to preserve and utilize existing organizations to the greatest extent possible.

But peace must first be earned by complete and unselfish cooperative effort and common sacrifice. Let us always remember this as we project our hopes into that future which is ours to make or mar.

^{*}It is a pleasure to be able to ascribe much of the credit for this promising situation to a member of your local organization. Frazier Bailey, Acting in let Lewis Douglas, War Shiping, Administration, has brought to the group of officials of the War Shipping Administration, Army and Naws here, added inspiration to explore all possible lines of improvement and has provided incentive toward the closest coopera-

Keep Posted!

NEW EQUIPMENT AND MACHINERY FOR YARD, SHIP AND DOCK



WELDING a big gear blank. The electrically - controlled manipula-

HE IMMENSE PHYSIcal size of marine propulsion gearing means that it must be extremely accurate. A second reduction or "Bull" gear for an 8500-shp ship, the Maritime Commission's C-3 design, is 146 inches in diameter, or approximately twice the height of a tall man. Its two helices are each 181/2 inches wide and are separated approximately 24 inches. The extremities of the teeth are over 60 inches apart.

To maintain tooth contact in a gear set of this proportion, the shafts of the mating gear and pinion must be parallel, and the gear faces must be parallel to their respective shafts. In a correctly machined set of C-3 gearing, nine teeth are in mesh between the bull gear and its mating pinion in each helix. Each tooth of the gear picks up approximately 1/18 of the total torque load as it meshes. This load is transferred from one end of the tooth to the other as the gear revolves.

If there are inaccuracies in the parallelism of the shafts or faces, or in the teeth, the load on the teeth will be unequally distributed; some teeth or portions of them will mesh lightly, or not at all, and others will be loaded in excess of their designed capacity. The

result of slight inaccuracies may be evidenced by pitting or scaling of the overloaded tooth face. Extreme inaccuracies result in noise and in some

REQUIRE PRECISION

cases tooth breakage.

GEARS

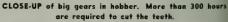
BIG MARINE

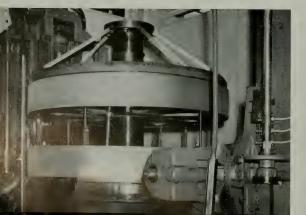
The Maritime Commission requires that the C-3 gearing be designed so that under normal load, the tooth pressure shall not exceed 60 pounds per inch of face per inch of pinion diameter. This is regarded as a conservative figure, but inaccuracies in machining may result in instantaneous pressures two or three times the designed figure.

Obviously, the tools used in the manufacture of marine gear units must be the most accurate obtainable. This is particularly true of the lathes on which the gear blanks are turned, the boring mills which bore the housing fits for the bearings, and the gear hobbers which generate the teeth. Of these three tools, the gear hobbers offer the greatest problem because of the complex design.

The hobbers themselves are marvels of accuracy. The 60-inch vertical slides for the hob carriers are so carefully hand scraped that the hob does not vary two ten-thousandths of an inch to or from the table throughout the entire face of the gear to be hobbed. Even the perfection of the machines is not sufficient safeguard

DOUBLE-CUTTER MACHINE cuts these two big "bull gears" with extreme accuracy in air conditioned room.







for accuracy as a 146 meh car will expand one thousandths of an meh in diameter with a temperature change or only 10. Eabrenbert, It the holden, speration started at a temperature of 70° E and finished at 90° E, the hold would be 009 meh deeper in the san at the end of the cut than at the start.

Hobbing Machines Enclosed in Air

Conditioned Room

An conditioning of a lung shop is within the range of possibility, but hardly instance when most operations are not affected by temperature variations. Temperature of the gear hobbers and the gears must be controlled if accuracy is to be obtained.

In a clock pendulum escapement, expansion of the pendulum rod can be compensated, by use of materials of different expansion coefficients, so that over a wide range of temperature the center of mass of the pendulum is at a constant distance from the pivol. Compensation of this character can be used only in a simple mechanism. In a gear hobber, the large number of complex parts eliminates the possibility of compensation.

At the Westinghouse Merchant Marchines is enclosed in an air conditioned room and the temperature is maintained between 68° and 70° F. The temperature of the gear being cut rises above room temperature as the first few cutting revolutions progress. This generated heat is partly carried away by an oil flush and partly distributed through the gear so that the temperature remains constant throughout the cut, even though above the room temperature.

Portions of the hobber, particularly where the moving parts are carried in bearings, change temperature with operation. As in the case of the gear, these parts reach and maintain constant temperature while teeth are being generated in a gear.

The finishing cut is the critical period in cutting a gear. One hundred and twenty-five hours of continuous operation is required for the finish cut on a bull gear helix having 693 teeth, a hob diametral pitch of 5, and an 1813 inch face. If the machine stops during that period, the gear may be ruined. When the hobber stops cutting, the gear changes temperature, gradually cooling and contracting until room temperature is reached. In some cases it is possible to save such a gear by withdrawing the hob and starting the cut at its beginning. The salvage of such a gear depends upon how close to tolerance the original cut was run-

Naturally, every possible precaution is taken to avoid stopping the machine during the finishing operation. The power source is direct current with a storage battery, placed as close as possible to the machine, floating on the

teed line. In case of a power failure, the battery applies a arrest and the bolder construction to cut without a second's interruption.

While the period purpose of the an conditioned rooms surrounding the holder is to the transfer on tank temperature, it is also advantageous in maintaining constant himself with with that that one in temperature and himself that the condition of the Philadelphia area, condensation can cause considerable corrosion of finished surfaces. Vaccar could be low temperatures of a spring or fall evening can become dripping wet during

a succeeding hot humal day. A completed grat is slughed to avoid day, a trear this source. During the hobbing operation, it carried on in the open, corrosson might occur on one helix while the other was hein, cut.

An accurately hobbed set of grantaneeds no lapping, scraping or grinding, but the degree of accuracy must be superlative if, in regular production, no final finishing whatever is required. In the Merchant Marine Plant many gears have been machined that have not required tapping, and those that have required this operation have needed a very small amount of correction.

FIRE PROOF EMBARKATION LADDERS

Whether in peace-time or war, fire aboard ship, and the attendant perils or debarkation, hold the greatest of all terrors for men of the sea.

Thus it is that the marine engineering profession and the marine equipment manufacturer have joined in constant research to minimize fire hazards aboard ship, and to provide the safest, surest means of debarkation in the event of fire.

From this research have come the multiple chain ladder, the chain cargo net, the chain car sling, and the between decks vertical chain ladder—all developments of the American Chain ladder Company, Inc., and all representing the most modern in marine equipment.

The multiple chain ladder is now required as standard equipment on vessels under the supervision of the United States Maritime Commission, and is in use on ships of various types in the United States Navy.

Sure and firm footing for men going over the side in an emergency, may mean the saving of lives. It is of paramount importance when men are burdened with landing equipment.

The multiple chain ladder offers firm, evenly-spaced and secure foot rests; the taut, vertical chains offer convenient grasping surfaces for the hands. The climber may hold himself comfortably vertical against the ladder, knowing that the next step below is where he expects to find it.

Stout spars hold the ladder away from the ship side and allow the climber simply to hook his arm conveniently around the vertical chain when he rests. These spars also prevent an unexpected lurch of the ship from smashing hands against the sides.

Made of heavily galvanized chain and thoroughly impregnated, rot-re-

sistent wooden rungs, the multiple chain ladder is practically indestructible by fire.

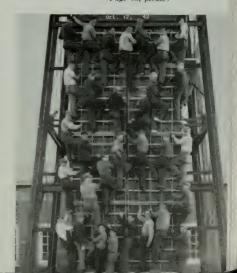
Thus if a burning ship is to be re-

Thus if a burning ship is to be reboarded, the chain ladders used for debarkation will offer ready means of reembarking. In the present emergency, when sometimes elaborate measures must be taken to attempt the saving of ships, this possibility of re-boarding offered by the multiple chain ladder has been called a tremendous contribution to the war.

Yet, in spite of its strength, added capacity, security and indestructibility, the ladder is light and easy to stow and handle. A length sufficient to reach from the top side of the largest ship to the water can be readily carried by two men, and be be thrown overside by one.

For loading, the flexible, strong and durable chain cargo net eliminates all fire hazard.

Used more extensively today than ever before in the 26-year history of the American Chain Ladder Company, these products are being tested and (Page 00, please)



CHAIN DEBARKATION LADDER provides safe and sure means of debarkation in event of fire.



by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

VIII-Electric Propulsion Equipment (cont.)

Tachometer Generator

A tachometer generator consisting of a casing (3), Fig. 13, and a rotating magnet (1), is provided at the high-pressure end of the turbine. The rotor is attached to the hub of the emergency governor, and is therefore driven at a speed directly proportional to the speed of the turbine. This tachometer generator is the saturated type and its output is an ac voltage proportional to the speed; this voltage is delivered directly to the speed indicator.

Access to the end of the shaft for applications of a mechanical tachometer is obtained by removing the cap (5), Fig. 13.

Steam-Seal Regulator and Piping

The steam-seal regulator consists of two valves (27) and (28), Fig. 14, a spring-loaded pressure-relay piston (42), a pilot valve (41), and a bellows assembly (40).

The flange marked C in Fig. 15 is piped to the high-pressure and low-pressure turbine packings; the flange marked D is piped into the turbine shell at the 9th stage. The sealing-steam supply marked B is piped to the valve (28) directly from the 70-lb. auxiliary steam line. The oil that serves as an operating medium for the regulator is piped to the pilot valve (41) from the ship's 25-lb. supply.

During low load, when pressure in the sealing system falls below 2-lb. gage, pressure on the bellows assembly (40) is reduced and the pivot rod (38) moves downward. This movement is transmitted through levers (15) and (16) to raise the pilot valve (41). This action drains oil from piston (42), causing this piston to move downward and thereby close the valve

(27). After valve (27) is closed, valve (28) opens and admits the supply steam to the sealing system to increase the pressure therein.

When the pressure in the system rises above 2 lbs., as would normally occur during higher loads, the reverse of the above action takes place; the increased pressure in the bellows chamber raises the pivot rod (38) and thereby lowers the pilot valve (41) to admit oil to the piston (42) cylinder. The resultant raising of the piston (42) causes the valve (28) to close, after which the valve (27) opens. The steam supply to the packings is thereby shut off, and steam from the high-pressure packing is permitted to flow to the low-pressure packing. Excess steam beyond that required to seal the low-pressure packing is piped from the high-pressure packing through valve (27) to the turbine shell at the 12th stage

In case of failure of the bellows (40), the pivot rod (38) moves downward. Due to the force exerted by spring (17), lever (16) pivots around pin (20) lifting the pilot valve (41), and dumping the oil from below the piston (42). The piston (42) moves downward closing the exhaust valve (27) and opening

Steam Seal

Regulator

FIG. 15 - Dia-

gram of steam-

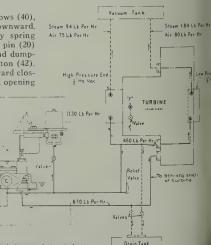
seal system.

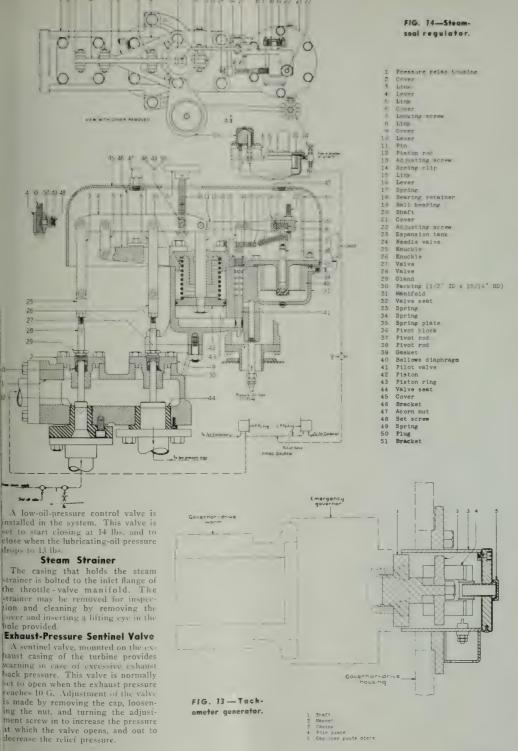
the steam-supply valve (28), insuring sealing-steam supply to both turbine packings. The positions of the valves (27) and (28) may be controlled manually by means of the handwheel (7); for example, turning this handwheel clockwise opens the exhaust valve and closes the steam-supply valve.

When first installed or after extensive changes, adjust valve X so that when running at no load and with the inlet valve (28) wide open, the pressure in the manifold chamber does not exceed about fifteen pounds. The needle valve (24) should be closed enough to prevent sudden surges upsetting the regulator; closing the valve too far will cause hunting due to the lag between the pressure change in the bellows chamber and the pressure change in the line.

Lubricating System

The line diagram of the turbine-generator lubricating system is shown in Fig. 16. The gravity system should provide that a pressure of 10 lbs. be maintained at the generator bearing.







Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A DEPARTMENT FOR DECK OFFICERS

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Going Up for Examinations

Dear Skipper:

I am sailing as mate on one of the new Libertys, having recently returned from a voyage to the Southwest Pacific, and our time here on the coast between trips is very short and uncertain. The company for whom I work are badly in need of experienced men to go out as master. I have sailed mate for the past three years, and have had over ten years as licensed officer.

On a previous voyage, I requested leave to get my license raised, but the port captain refused this request on the grounds that I was needed too much to give me a trip off to go to school, and that with my experience I should have no trouble getting my license raised.

On the strength of this, I went up this time in, after studying for the whole of last voyage, and took the examination for my Master's License. After the completion of the examination, I was refused a raise in grade until I studied some more, because I failed in three questions that I should know, according to the examiner. This means that I shall return to sea on a long trip, and it will delay my

getting my license for from six months to a year, and because I have started with one examiner, I cannot go up anywhere else for a period of one year.

The three questions I missed had nothing to do with navigation, ship's business, or safety at sea, and I shall give them to you with my answers as well as I can remember them, for I did not write them down nor take them from the examination room.

After reading them over, I hope you will answer through your column these questions for me. Do you think refusing me a raise in grade was justified, and if not, what action is open to me?

Here are the questions, and my answers:

Question No. 1.—How much dunnage is required before loading cargo and how is it laid?

My answer.—Two inches in the lower hold, with the bottom layer fore and aft. Two inches in the 'tween deck, with the bottom layer athwartships.

Question No. 2.—You are on a course of NW x N, speed 15 knots; the apparent direction of the wind is NE force 6. What is the true

force and direction of the wind?

My answer.—NNE force 5. (This was a pure guess. It is much easier at sea to get the true direction of the wind than to get the apparent direction of it, so I knew nothing about the question.)

Question No. 3.—What is Portage?

My answer.—Carrying a small boat from one navigable body of water, such as a river, to another such navigable body of water, over land.

Now "Skipper," what do you think of these questions? Do they test my qualifications for a Master's License, or in any way contribute to the war effort?

Very truly yours,

R. B. M.

Since its inception, the Steamboat Inspection Service has had certain questions such as the three you received, that always cause trouble, and made it necessary for the correcting examiner to explain the question more fully, or to refresh the memory of the applicant, where he did not have the information about these particular questions before he sat for his examination.

Since the Steamboat Inspection Service was taken over by the U. S. Coast Guard, the problem has become somewhat more aggravated, because the majority of the questions and their accompanying keys are prepared in Washington, and the examinations are subject to review from Washington as well, so that now you had better either answer according to the key as provided to the Inspector, or be marked wrong.

The Steamboat Inspection Serv ice started sending examinations from Washington before the Coast Guard took charge, but not to the extent that it is done at present. When the old Steamboat Inspec tion Service was consolidated with the Bureau of Navigation, it was officially named the Bureau of Marine Inspection and Navigation. More recently, this bureau has been placed under the Coast Guard, and the authority of the local inspector to modify the keys has diminished to a great extent, so that today those poor questions must be culled out from Washington, and that takes time. I shall discuss the problems from the Bureau of Marine Inspection Service first and then take up your questions.

The Steamboat Inspection Service was charged with the responsibility of determining the qualifications of an applicant for a license, and the issuance of a license to those so qualified.

In the days of sail, this was not a difficult task, for a man had to lo his time in sail to get familiar with the language of the sea, to show a vessel and her rigging, and sheer merit and performance gave him his opportunity to sail as unicensed second mate. The examination as prepared was purely one of sea terms, definitions, and he day's work, with its intricate problems of course correction, current, and large allowances for leeval

The first two generations of teamship men were required to know all the terms of sail, and the avigation of a sailing ship, to get a license in steam, although nany of them never set foot board a vessel under sail.

Each generation since has had o learn less of sail, as the inspecors were able to prepare questions more suitable to the era of steam, though we still have problens in the day's work with a leeway allowance on a short course of fifteen or twenty degrees, and questions about parbuckling spars aboard a dismasted ship, while a steam vessel would have to be dismasted, and "disboilered" to have to resort to parbuckling today.

Much of this has been because the Steamboat Inspection Service has always been undermanned, somewhat hidebound, and anxious to keep alive the customs and traditions of sail. It has always been, and is today, necessary for an officer in an American merchant ship to learn his profession as it is practiced today, in order to hold his job with his employer, and as it was practiced in the 1880s, to get a license.

Each local inspector's office had a series of examinations for each grade of license, printed on cards, or in envelopes, which were used from year to year. Few men were able to read or study enough to answer the questions asked in all those cards for a particular license, so in every seaport in the States, there was established a nautical college, nautical academy, or navigation school that kept a complete set of records of each examination's questions as asked of their students. In a short time they had a set of cards as complete as those of the inspectors.

The officer who knew his subject (or for that matter, one who did not) could attend these schools for a week or two and learn all of the questions required by the inspectors in that port. When he finally went to the inspectors, after he got his first card, and if he was able to remember it fully, he could return to the college each night and get a pretty accurate preview of the questions that he would have to answer the following day.

Because of the number of questions required throughout the United States; changing these questions would be and is a big job. Our universities and armed services have spent years and thousands of dollars studying proper preparation of tests to de-

termine a man's knowledge of a given subject, and today, their tests, though very good, are a long way short of their desired goal.

It is unfortunate in your case though that you should be denied a license to which you are entitled wholly because you failed to know the answers to three seemingly unimportant questions. The war effort and our forces in far-away places that can be reached with supplies in quantity only by water are the innocent victims if ships must be kept idle because of scareity of licensed officers, and yet we know those ships will not be kept idle, even if they must be manned with men far less qualified than you are, with your experience.

You have no recourse, other than to write to the inspectors who examined you and get permission to complete your examination in another port, and hope their questions will be more modern. Writing Washington might get you a hearing, but a license no faster, and I take it that your Master's License is what you are primarily interested in.

I shall discuss your questions now.

Your question number 1 is of course an old standby. How much dunnage, etc.? I have never been aboard a ship that didn't have a good tight ceiling in the lower hold, and double bottom tanks. I have answered that question for each license and the correct answer was 18 inches over the keel, or 18 inches amidships, and 24 inches in the bilge. I never had to make mention of the 'tween decks; for sailing ships, when that question was prepared, didn't have 'tween decks. Imagine trying to tell a modern steamship company that you needed 18 inches of dunnage in the lower hold.

From all accounts, the modern key calls for 6 inches amidships, and 9 inches in the wings. This is a marked step towards improvement, and might be explained that where ceiling is installed, this amount may be decreased. Many cargoes require no dunnage over good ceiling, and some day the

(Page 101, please)

Meus PACIFIC NORTHWEST

by R. H. Calkins



WINDJAMMER NOW A BARGE . . . The famous fur-trader C. S. Holmes converted recently to Army barge at Winslow Marine Railway & Shipbuilding Co.

Fur Trader Becomes Army Barge

After long service as a fur trader, the picturesque old sailing vessel C. S. Holmes has emerged from the yards of the Winslow Marine Railway & Shipbuilding Company as a barge.

Named for the late C.S. Holmes, one of the original owners of the Port Blakely Mill Company, the C.S. Holmes was a product of the historic Hall Brothers' Shipyards, predecessor of the Winslow Marine Railway & Shipbuilding Company, which converted the vessel into a barge. The Holmes was built 50 years ago. Bainbridge Island shipbuilders worked on the four-master then and Bainbridge

SPONSOR'S PARTY for launching of destroyer Hailey at Seattle plant of Seattle-Tacoma S. B. Corp. Rear Admiral Claude S. Gillete and his wife, the sponsor, son Tom, and daughter Diane.



Island shipbuilders of a new generation converted her for Army service.

Destroyer Launched

Seattle - Tacoma Shipbuilding Corporation, March 9, launched its thirteenth destroyer, the Hailey, named for a hero of the War of 1812. The new fighting ship was christened by Mrs. Claude S. Gillette, wife of Rear Admiral Gillette, production manager of the Puget Sound Navy Yard.

History recounts that Captain Hailey, for whom the destroyer was named, commanded the privateer True Blooded Yankee, which was fitted out by Rhode Island men in France, and sailed from Brest March 1, 1813, for the Irish Channel, where she began preying on enemy commerce.

Seamen's Service Center

Licensed and unlicensed men of the Merchant Marine arriving in Seattle after voyages to the war zones will find rest and recreation in a United Seamen's Service Center. An executive committee of the U. S. S., for the Seattle area has taken over the entire second floor of a building at 1616½ Fourth Ave., near Pine St., where the center will be established. The plans include a lounge, game room,

library, vocational classes and a luggage room, which will occupy 6500 feet of floor space.

The Merchant Marine Maids, composed of Seattle women who have husbands, sons or brothers in the United States Merchant Marine, will assist in arranging programs of entertainment for the men.

Graduate Seaman's School

Seattle shipping men have been advised that the War Shipping Administration is planning to establish on Puget Sound a graduate station, where men who have received preliminary training at the Avalon Station in California, may be sent to await positions aboard ships in the Puget Sound area. While at the graduate station, the men will receive advanced instruction. The announcement came from Telfair Knight, director of training of the W. S. A.

Supervisors' Dinner

The Supervisors' Club of the Winslow Marine Railway & Shipbuilding Company held a dinnermeeting the evening of March 1 at the New Washington Hotel. Lieut.-Comdr. D. J. Fass, personnel officer of the Puget Sound Navy Yard, spoke. Capt. William J. Malone, Naval supervisor of

PACIFIC MARINE REVIEW

hiplending in the Puget Sound rea, and officers of the Winslow meany, were guests. The Super iscuss Club, which has 205 memers, was organized recently by stemen of the company in an efart to speed production and infease plant harmony. Officers of the organization are: Edward A. Black, president; Jim Copeland, ice president; Vic Proulx, secreary, and Elmore Ross, treasurer.

hipyard Sold

Confirming the sale of the Marinsen Shipyards of Anacortes to Milton P. Roumm, Scattle busiessman, and F. H. Hawthorne f Burlington, Wash., for \$32,100, nited States District Judge loyd L. Black in Seattle Februry 20 signed a court order. The hipyard, which has been shut own for some time due to finanial difficulties, was engaged in a ar contract, which the new ownrs are assuming, according to Villiam Ferguson, Seattle attorey, who was appointed receiver y Judge Black.

aunchings

Ships for the Navy and the



TERVIEWER—RICHARD J. FLETCHER is been appointed exit interviewer at the Washington Shipyards in an effort decrease labor turnover and to mainin harmony between workers and anagement. He was formerly with U. Employment Service, Yakima, Washigton.

HUGE TUG

This sturdy seagoing Army tug, launched from Barbee Plant No. 2 on February 27 on Lake Washington, Is the first of a contract of ten



yards in the Scattle area February 27. Two steel mine sweepers were given to the sea at the Harbor Island plant of Associated Shipbuilders, and a sturdy occan-going wooden tug was launched from Barbee Plant No. 2, in their new shipyard on Lake Washington at Bryn Mawr.

The two mine sweepers were given the names of Spear and Triumph. Lois Ann Wilcox, 12 years old, christened the Spear. The flower girl was Mary Virginia Wilcox, 9. They are daughters of C. R. Wilcox, assistant to the general manager of Associated Shipbuilders, and Mrs. Wilcox.

Miss Dorothy E. Stebbins, daughter of G. H. Stebbins, general manager of Associated Shipyards, and Mrs. Stebbins, christened the Triumph. The flower girl was little Daphine Morris, 4 years old, daughter of G. S. Morris, assistant to the general manager, and Mrs. Morris. Raymond J. Huff, vice president of the Puget Sound Bridge & Dredging Company, was master of ceremonies. Mrs. Ruth Kremen, electrician's helper in the yard, sang patriotic songs accompanied by the shipyard band.

At the plant of the Lake Union Dry Dock & Machine Works, the YMS-290, a wooden mine sweeper, was christened by Suzanne Marion, 10 years old. The flower girl was Virginia Marion, 8. They are grandchildren of A. F. Marion, general manager of the Lake Union, Dry Dock & Machine Works.

Halibut Fleet

Announcement by the International Fisheries Commission that the quota of halibut that may be caught on the North Pacific during the 1943 season has been increased from 49,500,000 pounds to 50,500,000 pounds will mean that the largest fleet in the history of the industry will be operated on the banks, fishermen said. The season opens April 16.

The larger quota will make available for wartime consumption 1,000,000 pounds more of halibut during 1943 than in 1942, at a time when many foods are being rationed.

Representatives of the Seattle Fishing Vessel Owners' Association said that the Seattle fleet consists of 175 vessels manned by 1400 fishermen. Approximately 150 vessels operated out of Seattle during the winter, fishing for cod and shark. It was the largest winter fishing fleet in the history of the industry in this port, a result of the demand for soupfin-shark livers and fish for food, and the higher prices for cod.

Agents' Association

Organization of the Northwest General Agents and Agents' Association composed of Seattle steamship lines, which will "further the war effort in coordination with the War Shipping Administration," was announced recently. The officers are:

Chairman, S. J. Swanson, manager of the Alaska Transportation Company; vice chairman, L. W. Baker, general manager of the Alaska Steamship Company; sec(Page 87, Please)

Mews FROM THE PACIFIC SOUTHWEST

by K. M. Walker

Calship's Low Absentee Record

"No immediate change in the work schedule of the 40,000 men and women of the record-breaking California Shipbuilding Corporation will be made."

This announcement was made in view of the Sunday holiday which became effective March 21 for all workers at the **Marinship** yard at Sausalito, Calif.

Calshippers now have a rotating day off, with a Sunday holiday every seven weeks, and the yard operates on a three-shift, sevenday week basis.

Because of the speed of production now being achieved at Calship, the elimination of Sunday work would mean two less "Calships" per month. Records indicate that production on Sunday equals, and, in some cases, exceeds other days, and that absenteeism on Sunday is not excessive.

Shipyard officials view the Marinship Sunday holiday as a test, approved by the U. S. Maritime Commission, to determine if such a plan would reduce absenteeism.

With an absentee ratio of approximately four per cent, Calship has steadily reduced the figure and now has perhaps the lowest number of A.W.O.L. workers of any war plant in the country.

100 Ships Ahead of Schedule

Exactly 100 Liberty ships ahead of schedule.

That was the status of the champion California Shipbuilding Corporation yard at Terminal Island March 19, when it launched its 155th, 10,500-ton cargo carrier, the S. S. John S. Pillsbury.

Its 55th ship—the S. S. Peter H. Burnett—was originally scheduled for delivery on this date, but was launched August 10, and delivered in September, 1942.

Named after the well-known flour miller and one-time Governor of Minnesota, Calship No. 155 was sponsored by Mrs. John H. Mellom, wife of a colonel in the Army Transport Service stationed at Fort Mason, San Francisco.

On the ways only 27 days, the Pillsbury's keel was laid February 20

Of the 155 ships launched by Calship, 146 have been delivered to the U. S. Maritime Commission.

Concrete Naval Vessel Delivered

Just before noon of March 11, mooring lines securing the Concrete Ship Constructor's Hull No. 2 to the outfitting pier at the big National City plant were cast off, and, in tow of powerful tugs, the first concrete tank ship to be acquired by the United States Navy slipped out into San Diego Bay and headed down the channel toward the sea. Bound to an oil port to load a full cargo, she will soon appear in one of the battle zones to supply ships, trucks, tanks or airplanes with the vital liquids.

Displacing over 14,000 tons loaded, the appearance of this unique craft is not much different than other seagoing tow barges in the oil trade, and the arrangement of the deck equipment and tanks follows closely the accepted standard tanker practice. Cummins diesel generators furnish electric current to power the cargo oil pumps and the deck machinery. Two of these are located in the

poop in a neatly arranged generator room, and a third is in the forecastle to supply power solely for the big automatic electric towing machine fitted under the forecastle head. In a concrete deck house amidships are two more Cummins diesels each driving a deep well pump, one on each side of the ship's centerline. These are connected to a line of suction and filling pipe running fore and aft, one on each side of the centerline bulkhead, with suctions in each tank controlled by reach rods to the deck. There is no cargo piping on deck except a filling line and a discharge line led athwartships across the front of the midship deck house.

The crew is all quartered in the poop, in comfortable and spacious rooms fitted with forced ventilation. The Webster-Brinkley steering gear, an electric-driven quadrant gear is also located in the poop over the rudder head and is controlled from the pilot house over the poop by a simple lever. A long wooden catwalk on steel stanchions leads forward from the poop over the midship deck house to the forecastle head, on which is located the electric windlass.

There are 22 such barges under contract to the National City plant of the Concrete Ship Constructors, this being the first of six to be taken over by the Navy and is the first vessel to be delivered by this contractor.

Launchings in San Diego

While all yards are buzzing with activity in the construction of several types of wooden vessels for the Navy, the launchings at the San Diego yards struck a lull for the month ending March 17.

On February 17 the San Diego Marine Construction Company anched the VMS 284, the twelfth ach mine sweeper to be launched to this yard in a year, with Mrs. ohn J. Flachsenhar, wife of Lt. ohn J. Flachsenhar, as sponsor, apt. F. P. Conger, the principal peaker at the ceremony, said, "It my privilege to report that the aval Trial Board has declared us vessel to be an outstanding antibution in its class."

obster Camps to Stay Open

Instead of closing as they usully do with the end of the lobster shing season, the numerous lober camps located along the ower California shore will reain open this year for the first me in their history. The lobster ason in Mexico and California ided March 16, but there is some alk of extending the season this ear for an additional thirty days. Chether or not this extension is ranted, the sixty-odd lobster imps will switch over to gatherig gelidium, or agar weed, and me clams and abalone for the esh fish market. The great war emand for gelidium for the agar anufacturing plants in San iego promises full-time profitle operation for the lobster mp crews. In the pre-war years is weed was all gathered by panese operating in small boats I the California and Mexican pasts, while most of the agar, for edicinal, chemical and bacterial ilture work, was produced in pan. Now, however, another yth of cheaper Japanese producin has been exploded as, with lvanced methods and the develment of improved machinery, merican produced agar is now oth cheaper and of far better lality than that previously manactured in Japan.

The leading Southern California oducer, the American Agar and hemical Company of San Diego, is been steadily acquiring a fleet boats to gather gelidium to supy their big new San Diego plant. ost of these boats are operating it of Newport Beach and range of the gelidium beds from ceanside to Catalina Island.

Big Dredging Project Starts

Another long step towards making San Diego Bay navigable its full length by deep-water vessels was started towards the end of February when the Standard Dredging Company's hydraulic dredge Point Loma started work in the area extending from the destroyer base to the National City waterfront. The Case American Construction Company are also engaged in this contract and their big electro-hydraulic dredge San Diego is at work in the same area.

The contract calls for the removal of over 4,000,000 cubic yards of spoil from the bay bottom and its disposal in the ocean along the Coronado strand by means of a 6000-foot trestle pipe line extending across the harbor. Part of the spoil is to be used in filling tidelands between Sixth and Eighth Avenues in National City, and on both sides of the railroad tracks between Division Street and the Seventh Avenue slough.

Proposed New Cargo Pier

Franklin Holland, transportation and salvage representative of the lend-lease administration, was in San Diego the middle of February to investigate rail and water shipping conditions and recommended application for Federal aid in the construction of the proposed new Tenth Avenue Pier in San Diego. It is proposed to ship huge quantities of lend-lease materials out of the port of San Diego and, with the municipal piers now in the hands of the 11th Naval District, no facilities now exist to handle such cargoes.

The Tenth Avenue Pier has been proposed by the Harbor Commission, headed by Joe Brennan, as a post-war industrial development, but the Government requirements for facilities to handle the lend-lease cargoes may demand the construction of the pier in the immediate future and would require that available Harbor Department funds be augmented by a Federal grant and issuance of priorities for the construction materials

NORTHWEST NEWS

(Continued from page 85)

retary, William Semar, general manager of the Northland Transportation Company. Six Seattle steamship lines are members of the organization—the Alaska Steamship Company, Maska Transportation Company, American Mail Line, James Griffiths & Sons, Northland Transportation Company and Olympic Steamship Company, Inc.

Personal Gleanings

DWIGHT HILL, former Seattle shipping man, who was a prisomer of the Japs in Hongkong, arrived in New York recently from London by plane, and after a check-up at the Mayo Clinic in Rochester, Minn., will proceed to Seattle. He has not recovered completely from the treatment he received in Stanley prison in Hongkong. Mr. Hill arrived in New York in August, last year.

MARTIN G. SCOTT, guest speaker at a dinner of the Propeller Club of Seattle the evening of February 26, painted a startling word picture of the real Japan and unmasked the war-mad leaders of Nippon. Scott was in Government service in the Orient 20 years. He returned to the United States on the exchange liner Gripsholm after being imprisoned by the Japs in Kobe.

ROBERT O. BULLWINKEL, former seafaring man who sailed in ships plying to the Orient and Alaska and later became a steamship company official, has been appointed to the executive staff of Northwest Airlines. He formerly was with Pan American Airways, and leaves the position of traffic manager of the Alaska Division of that company to join the executive staff of Northwest Airlines, and to serve as assistant to the president in the western region.

VICTOR J. SAMSON, fisheries statistical and marketing agent in charge of the fishery market news service in Seattle of the United States Fish and Wildlife Service, has been appointed regional fisheries representative for Washington and Oregon by the coordinator of fisheries, Washington, D. C.



On the Ways of SHIPS IN THE MAKING

130 SHIPS DELIVERED IN FEBRUARY . . . 1943 TOTAL TO DATE 233

Surpassing all previous ship construction records, American shipyards during the month of February delivered into service 130 new ships, totaling approximately 1,239,200 deadweight tons, the Maritime Commission announced. This brings the total number of vessels constructed thus far in 1943 to 233, totaling 2,247,600 deadweight tons. Moreover, the number of ships delivered during January and February already exceeds the number delivered during the first six months of 1942.

Of the 130 ships delivered, 81 were Liberty ships, 15 C-type cargo, 9 tankers, 23 special types, 1 concrete barge and 1 coastal cargo ship.

West Coast yards still maintained the lead in the production of deadweight tonnage, delivering 52 per cent of the country's February production. East Coast yards accounted for 36 per cent, while the Gulf and the Great Lakes contributed 11 per cent and .23 per cent respectively.

Condensers for Tankers

It is rather an interesting side light on the tanker building program of Marinship that the condensers for the steam turbines of these tankers are being built by the Oil Well Supply Company at Oswego, New York, where the former boiler shop has been converted for that purpose.

These condensers weigh 28 tons, and contain nearly ten miles of 34-inch condenser tubes with cooling surface of about 10,000 square feet. These tubes are arranged between tube sheets held in a welded steel shell. The cooling sea water

SHIP DELIVERIES	IN FEBRUARY	
SHIPYARD	No. of Vessels	Type of Vessel
Bethlehem-Fairfield Shipyard, Inc	8	Liberty
Baltimore, Maryland	11	Special Type
Bethlehem-Sparrows Point Shipyard, Inc.	2	Tankers
Sparrows Point, Maryland		
California Shipbuilding Corporation	14	Liberty
Wilmington, California		
Concrete Ship Constructors	1	Concrete Barge
National City, California		Concrete burge
Consolidated Steel Corporation, Ltd	6	C-1 Cargo
Wilmington, California		C-1 Curyo
Delta Shipbuilding Company, Inc	5	Liberty
New Orleans, Louisiana		Liberty
Federal Shipbuilding & Dry Dock Co	2	C-2 Cargo
Kearny, New Jersey	4	C-2 Curgo
Gulf Shipbuilding Corporation	1	C-2 Cargo
Mobile. Alabama		C-2 Cargo
Houston Shipbuilding Corporation	5	Liberto
Houston, Texas		Liberty
Ingalls Shipbuilding Corporation	2	C-3 Cargo
Pascagoula, Mississippi	_	
Kaiser Company, Inc.	1	Tanker
Swan Island, Portland, Oregon		
Kaiser Company, Inc.	11	Special Type
Vancouver, Washington		
Kaiser Company, Inc. (outfitted at Orec	jon} 4	Liberty
Vancouver, Washington		
Kaiser Company, Inc.		Special Type
(Richmond Shipyard No. 3A), Richmond		
Marinship Corporation	A	Liberty
Sausalito, California		
Moore Dry Dock Company	2	C-2 Cargo
Oakland, California		
North Carolina Shipbuilding Company	9	Liberty
Wilmington, North Carolina		
Oregon Shipbuilding Corporation	11	Liberty
Portland, Oregon		
Permanente Metals Corporation		Liberty
(Richmond Shipyard No. 1), Richmond,	Calif.	
Permanente Metals Corporation	9	Liberty
(Richmond Shipyard No. 2), Richmond,		
Rheem Manufacturing Company	1	Liberty
Providence, Rhode Island		
Leathern D. Smith Shipbuilding Co		Coastal Cargo
Surgeon Bay, Wisconsin		
Southeastern Shipbuilding Corporation.		Liberty
Savannah, Georgia		
South Portland Shipbuilding Corp	6	Liberty
South Portland, Maine		
Sun Shipbuilding and Dry Dock Co	6	Tankers
Chester, Pennsylvania		
Western Pipe & Steel Company	2	C-3 Cargo
San Francisco, California		
TOTAL	130	

SHIP DELIVEDIES IN EERDILADY

is pumped through the tubes and the exhaust steam from the l. p. turbine is drawn into the shell, cooled and condensed to boiler feed water by contact with the cold tubes.

This is just another instance of the widespread conversion of peace-time industrial plant to war emergency effort.

MOTORSHIP SELANDIA SUNK

PRST diesel-engined ship ever built, which Winston Churchill as First Lord of the Admiralty in 1912 celled "the most perfect maritime masterpiece of the century," was sunk recently by enemy action, occording to news received by her owners, East Asiatic Company of Copenhagen and New York, the made regular trips to the Far East through the tangeles, San Francisco, Portland and Seattle. She was built by Burmeister & Wain at Copenhagen, Jenmark.



Tug Deliveries Soon

The Shelburn Harbor Shipyard of Domayan Contracting Co., Burnington, Vermont, is busy building our VT wooden harbor tugs, which the company hopes to aunch early in April. Since the middle of last November, the yard has delivered five vessels, three YFT's, and two SC's.

Marietta to Deliver

The complete delivery of conract of 16 mine planters, now wearing completion at the Marista Manufacturing Company, Joint Pleasant, West Virginia, is expected by the end of May. The company is also working on two 2000 - hp, twin - screw river towouts and fifteen 149-foot oceancoing tugs.

Sulfport Contracts Varied

The Gulfport Boiler & Welding Works, Inc., Port Arthur, Texas, re engaged in the construction of many types of vessels, among which are 143-foot rescue tugs, 02-foot tugs, garbage lighters, and seaplane wrecking derricks. Since the first of the year, the yard as delivered two of the rescue ugs and one 102-foot tug.

Marinship Launches S. S. Sun Yat-sen

Mme. Wei, wife of the Chinese ambassador to the United States, sponsored the S. S. Sun Yat-sen, the sixth Liberty ship launched at Marinship since January 1, 1943, and the 13th since ground was broken at Marinship less than a year ago.

Mme. Wei Tao-ming was appointed to the honor of christening the vessel named after the father of the Chinese Republic by Her Excellency Mme. Chiang Kaishek, China's first lady. Mme. Wei, the first lady of China in residence in America, is a notable in her own right—the first Chinese woman lawyer and first Chinese woman judge.

The Marinship launching was the only event of its kind in the nation-wide tour of Mme. Chiang's party. By it, the party of Mme. Chiang and Mme. Wei gave Chiana's recognition to the war contribution of American industry, particularly shipbuilding. It honored Marinship's hundreds of Chinese workers, and their families, and acknowledged the support San Francisco's Chinese pop-

ulation has given the Chinese Government and armies. Many old Chinese who were friends of Dr. Sun Yat-sen, founder of Koumintang, and who remember him from his San Francisco days, were present at the rites.

"M" Award to Sun Yard

The Sun Shipbuilding and Dry Dock Company, Chester, Pennsylvenia, having surpassed all its construction schedules, was awarded on March 23 for meritorious production the U. S. Maritime Commission's "M" pennant, Maritime flag, and labor merit badges for the workers. Rear Admiral Emory S. Land, Chairman of U. S. M. C., made the presentation.

Sun Shipbuilding and Dry Dock Company during 1942 produced 46 new merchant vessels, badly-needed tankers and cargo vessels, surpassing all previous production for that yard. Despite the unprecedented expansion of the Sun yard from 8 shipways to 28, there has been no sacrifice of effort, efficiency, or productivity. The skill and experience of men who have been with the yard for many years were used to beat their production goals.



EVIDENCE OF SPEED in production of wood hull construction at Bellingham Marine Railway & Boatbuilding Co. At the left are BARS type rescue vesses, 187 feet in length; the smaller vessels, in the foreground, are 136-ft. YMS mine sweepers.



FIRST GLIMPSE the Navy has permitted of its new destroyer escort vessel, powered by General Motors' diesels. Smaller than a destroyer, it is nevertheless fast and powerful.

Diesels for Escort Vessels

More than a million and a half horsepower in General Motors' diesel engines is being supplied to power an important percentage of the new destroyer escort vessel program of the United States Navy, which has been just announced by Secretary Frank Knox.. The Cleveland Diesel Engine Division of General Motors has now been permitted by the Navy to announce the use of its engines in this new program.

The disclosure gives some indication of the tremendous scope of the Navy's program to wipe the menace of Nazi submarines from the Atlantic

The power involved in just the General Motors' diesel share of the powering of these new vessels is sufficient to generate enough electric current to meet the average household demands of a city of considerably more than a million population. For instance, the power being supplied by General Motors' diesel would be sufficient to meet the average household demands of Boston, or St. Louis, or Baltimore with enough left over to take care of Jersey City or Louisville.

No details of the power plants for the DE boats can be made public other than the fact that the engines are one of the standard General Motors diesel products. The engines have been in use in other installations for several years, and facilities for the augmented wartime manufacture of them have been in full operation for months.

Navy Launchings

On March 13, the Port of Stockton came into its own as a shipbuilding center with the launching of the Navy rescue vessel, U. S. S. Anchor. This ship, one of the largest constructed at the inland port, slid down the ways at the Colberg Shipyard, and was sponsored by Mrs. Hattie Stevenson, designated by the Secretary of the Navy to christen the vessel in recognition of her two sons who are on active duty as Naval officers at sea.

On March 21, following a sister destroyer down the ways by only two weeks, the U. S. S. Owen was launched at the San Francisco yards of the Bethlehem Steel Company. The ship was named in honor of the late Commander Elias K. Owen of Kaskaskia, Illinois, who commanded the ironclad Illinois during the Civil War. The Owen was sponsored by Miss Hope Owen of Tribune, Kansas, a distant relative of the late Commander Owen.

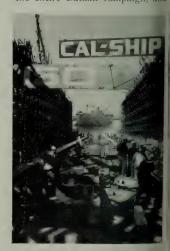
The U. S. S. Miller, sister ship of the Owen, was launched at Bethlehem just two weeks previously.

Consolidated Launches Three in March

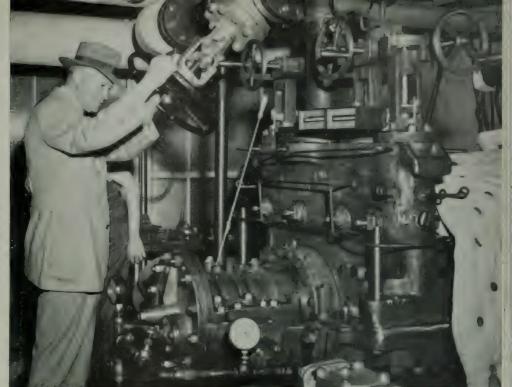
Two great transportation mediums—the railroad and the steam-ship—joined forces on March 3 for the launching of S. S. Cape Elizabeth when Mrs. Edward J. Engel, wife of the president of the Atchison, Topeka & Santa Fe Railway, christened a 12,900-ton passenger and cargo vessel launched from Consolidated Steel Corporation's Wilmington ship-yard.

Mrs. Engel's matron of honor was Mrs. F. G. Gurley, whose husband is vice president and director of Santa Fe.

On March 18 Consolidated launched the U. S. S. Comfort. The sponsor was First Lieutenant Eunice Hatchitt, A. N. C., who served in the Philippines through the entire Bataan Peninsula campaign, and was evacuated by airplane from Corregidor to Australia in April, 1942. Her maid of honor was First Lieutenant Beth Veley, A. N. C., who also participated in the entire Bataan campaign, and



KEEL LAYING OF CALSHIP'S 150th. Ansel Briggs on February 9. She was launched on March 10 (28 days on ways); delivered on March 27. Quite a difference from their first Liberty... 126 days on ways; 273 days from keel laying to delivery.



IRST URBINE

HARLES E.
HOORE, president of Joshua
lendy, turns the
hrottle to start
he first modern,
igh-pressure
carine turbine
ulit on Pacific
loast.

ho was evacuated by submarine, rriving in Australia 17 days later. On March 25 this yard launched as U. S. S. Mercy for the U. S. avy and Maritime Commission, he sponsor was Lieut. (j.g.) oris M. Yetter, (N.C.) U. S. N.

ederal Launches Three eceives "M" Pennant

March 7, two ships, converted naval auxiliaries on the buildg ways, were launched when the . S. S. Blue Ridge and the U. S. Rocky Mt. were sent into the ater from the Kearny shipyard U. S. Steel's Federal Shipbuildg and Dry Dock Company. The vo ships are among the first ival craft to bear the names of ountains. They were the 37th nd 38th vessels launched by the ederal shipyard under its conact with the Maritime Commison to produce C type cargo ships. The first into the water was . S. S. Blue Ridge, sponsored by rs. David Arnott, of Short Hills, . J., wife of the vice president 1d chief surveyor of the Ameriin Bureau of Shipping. It was followed by the U. S. S. Rocky Mt., christened by Mrs. Robert C. Lee, of Far Hills, N. J., wife of the president of the Propeller Club of the United States.

On March 21 the first transport of its type launched in the United States went down the ways of the Kearny shipyard of Federal Shipbuilding and Dry Dock Company. The ship was the largest launched there in more than 25 years of the yard's history. The sponsor was Mrs. Charles P. Gross, of Fort Meyer, Virginia, wife of Major General Gross, Chief of the newly organized Army Transport Corps.

Immediately after the launching, Rear Admiral Howard L. Vickery, vice chairman of the United States Maritime Commission, presented the Commission's coveted "M" pennant to employees of the Kearny shipyard.

New Yard at L.A.

The American Shipbuilding & Engineering Corporation of Los Angeles is conditioning a new yard to build small boats. The address is 617 South Olive Street.

Yard Changes Hands

The Mathis Yacht Building Company, Gloucester, N. J., is now owned by John Trumpy & Sons, Inc. John Trumpy is presi(Page 124, please)

FIRST OF NEW TYPE TROOPSHIP, the General John Pope, was launched March 25 at Federal Yard.



PRIL . 1943

MARINE DEPARTMENT
A E T N A I N S U R A N C E C O.
Q U E E N I N S U R A N C E C O.
MARITIME INSURANCE CO., LTD.
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NECROLOGY

Famous Pacific Skipper

On Sunday, March 14, at an Oakland hospital, **Captain J. H. Trask**, longtime skipper of the San Francisco-Australia run, cleared on the last voyage.

The Captain was a "blue nose." Rorn in Nova Scotia in 1866, he began "seafarin" while still a boy. Like many another Nova Scotian, he took one of the Canadian - built ships ("bread baskets") over to Great Britain and sold her there. Then he got a berth as a sailing ship master out of Glasgow and skippered more than one four-master in the long trek "round the Horn," making San Francisco several times before finally landing in 1803

Before long he was in steam for the Oceanic Steamship Co. in the Australia run, and soon was master of the liner Sierra. For 31 years continuously, he plied this long voyage, making more than 300 Equator crossings, and logging better than two-and-a-half million miles.

He came over to Matson Navigation Co. when that firm acquired the Oceanic Steamship Co., and retired from that service II years back, after having skippered the palatial new liner Mariposa on the Australian run.

Many of the younger captains in Pacific trades are proud to acknowledge the benefits they derived from training as junior officers under Captain Trask. The kindly justice of his strict discipline endeared him to crew and passengers alike, and few Pacific Ocean steamship masters were as popular as Captain Trask.

CAPT. J. H. TRASK



After retirement, he lived quietly in his Oakland home overlooking the harbor. Surviving are his widow, and two sons, Captain Fred Trask of Oakland, and Harold J. Trask of Honolulu.

Noted Naval Constructor

Rear Admiral John Godwin Tawresy, U. S. Navy (ret.), died in a Philadelphia hospital on February 17, after an illness of several months.

After graduation from Annapolis in 1885, Tawresy served as a cadet and ensign at the Asiatic and North Atlantic stations, and then was sent for three year's post-graduate studies at the Royal Naval College, Greenwich, England, finishing there as an assistant naval constructor in 1890. His career as an officer of the Bureau of Construction and Repair of the U. S. Navy parallelled the entire development of the modern Navy.

In the early years of this century, Commander Tawresy was Superintending Naval Constructor at the Union Iron Works plant at San Francisco, from which post he went to a similar position at the Camden, New Jersey, plant of the New York Shipbuilding Company, and thence to the Philadelphia Navy Yard.

From 1916 to 1925, Captain Tawresy was a member of the Board of Inspection and Survey, conducting acceptance trials for new Naval vessels. In 1925 he was commissioned a rear admiral, and in 1926 retired under the age limit. From 1927 to 1933 he was associated with the U. S. Shipping Roard

He contributed numerous articles to the technical press, and several notable papers to various technical bodies, and represented the United States at London during the sessions of the Internation Conference on Safety of Life at Sea (1929), and the International Conference on Load Lines (1930). His strong pointed discussion will be much missed in the meetings of the Naval Architects and Marine Engineers.

Two Tug Skippers

Deep-sea mariners will regret to learn of the passing of Captain Elmer R. Jackson, for years master of Red Stack tugboats. He was known to skippers of most every steamship plying into the San Francisco port, as his tugboat had been employed in moving or warping off-shore vessels to their berth, for the last 10 years.

Only 38, Captain Jackson passed away after a short illness, on March 16. Services were conducted at Golden Gate National Cemetery.

Captain Jackson is survived by his widow, Helen; his daughter, Barbara, 8; three brothers, Earl, Clifford and Leonard; a sister, Agnes Oliver; and his father, Frank Jackson.

Portland mariners sent word to fellow members of the MEBA along the Pacific Coast notifying them of the tragic death of Sidney Frederickson, 48, tugboat engineer, killed when a cable snapped during a launching. The line wrapped itself around Frederickson when it broke and whisked him from the deck of his tug into the Willamette River.

Fire Engineer Dies Suddenly

Walter Kidd, 65, founder and president of Walter Kidde & Co., Bloomfield, N. J., specialists in fire detecting and extinguishing equipment, died at his home recently.

After serving an apprenticeship with Burhorn & Granger, consulting engineers, he opened his own offices in 1900 at the age of 23.

Mr. Kidde was awarded the honorary degree of Doctor of Engineering by Stevens Institute of Technology.

In 1941 he received the honorary degree of Doctor of Science from Rutgers University. He was a Fellow of the American Society of Mechanical Engineers.

Steel Superintendent Passes

C. T. Keigley, general superintendent of Utah operations for the Columbia Steel Company, died suddenly in his home in Provo, Utah, March 11. He was 50 years old.

Mr. Keigley had been associated with Columbia Steel since 1923, when the present company was the old Columbia Steel Corporation. He assisted in supervising the construction of the company's Ironton, Utah, plant, and following completion of the plant was appointed superintendent of coke ovens. In 1933, he was appointed superintendent of Utah operations for Columbia Steel Company.

(Page 110, please)

PACIFIC MARINE REVIEW



ventieth Birthday for est Coast Plant

On March 3, 1943, the General Fleee Oakland Works celebrated a "war thday," marking the 20th anniverry of its establishment on the Pacific sast

John Hood, manager of the Oakland orks, congratulated employees on job they were doing in war proceeding, and welcomed the newcomers to were so ably adapting themselves their tasks, both men and women, prefer to regard this 'war birthy' as marking not a stopping point review past accomplishments, but her as marking our arrival at a mate age when we are capable of doing adult war job."

A salute to charter members was en by Mr. Andrew Yatsko, assistant mager of the G. E. Oakland Works, noring employees who had been the decidency of the organization at the time of its eption, or who transferred from the company plants at that time to the group are: C. A. Wilner, J. Depew, N. A. Stone; Peter J. Deker, E. J. Hoegemann, H. F. Roge, Dante Del Fava, W. G. Dressel, C. Schwinn, Clarence A. Hall, Otto ott, S. Manakoff, H. E. Barnickol, W. Orge Kinge.

A guest speaker at the war birthday emonies was Raymond M. Alvord, mmercial vice president, San Francio. Mr. Alvord told his audience t it was back in the '80's that the General Electric Apparatus office is organized in San Francisco. In 0 the G. E. Oakland Lamp Works sopened. In 1919 a new G. E. plant is secured in Ontario, California, ere household appliances were manctured until war was declared. Since t time the plant's facilities have n engaged in war production.

In 1923 the G. E. Oakland Works to into being," said Mr. Alvord, all in all, considering our service ps, which are really miniature faces, General Electric is operating factories here in California, with a h being built... the vision of those to who could foresee the industrial ansion of our great Pacific Coast

by Jerry Scanlon

JOHN HOOD, manager of the G. E. Oakland Works, gives Lt. J. E. Sharkey, USNR, some pointers on General Electric transformer coils during the 20th anniversary birthday ceremonies. Raymond M. Alvord, commercial vice president, G. E., San Francisco, looks on at right.



has certainly been justified."

Due to the fact that the G. E. Oakland Works is a defense plant and war productions schedules could not be interfered with, the 20th anniversary ceremony was held from 11:00 to 11:30 a.m., during the employees' lunch hour. Only immediate employees of the Oakland Works were invited to attend.

Portland Bids for Propeller Convention

Despite the uncertainty of 1944, W. A. Williams, vice-president and chairman of the convention committee of Portland, would like to have the national convention of the Propeller Club held in that city. The formal bid should be placed before the national board of governors for action in the 1943 meeting, according to Arthur Tode, honorary president of the national club.

Newsworthy names in the shipping world before the war and now en-

listed in various Government branches include—

... Admiral Cyrus W. Cole, USN retired, who was recently reappointed a member of the San Diego Harbor Commission,

... John H. Morgan on leave from American-Hawaiian, promoted to captain from lieutenant, USA, attached to the Oakland headquarters of the Transport Service.

... Henry V. Wheeler, general agent in Tacoma for McCormick Steamship Co., promoted to the rank of captain with the U. S. Army Transport Service, in the Northwest port.

... Owen Niemann, of the operations department in San Francisco, promoted to lieutenant (j.g), Port Director's Officer, Twelfth Naval District.

... Ralston Page, appointed assistant port director, U. S. Navy, Balboa, C. Z. He formerly headed the ship brokerage firm which bears his name in San Francisco.



JENKINS BROTHERS HONORED TWICE

THE WORKERS of Jenkins Brothers, Bridgeport, Connecticut, manufacturers of valves, were awarded the "M" Maritime pennant on March 2, 1943. The above photograph shows Director of Procurement Charles E. Walsh of the U.S.M.C. (right) presenting the "M" pennant and Victory Eagle flag to Bernard J. Lee, vice president in charge of manufacturing. On March 9, 1943, Admiral Wat. T. Cluverius, U.S.N. (Ref.), returned to Bridgeport to renew the Army-Navy "E" pennant for the company when he awarded a Service Star to that pennant.

NATION HONORS MARINE MANUFACTURERS

General Machinery Corporation

Award of its first gold star, to be added to the Maritime "M" pennant won last July, has been made to General Machinery Corporation, Hamilton, Ohio.

General Machinery Corporation embraces The Niles Tool Works Company, The Hooven, Owens, Rentschler Company, of Hamilton, and The General Machinery Ordnance Corporation of Charleston, W. Virginia. These companies are producing heavy machine tools, steam and diesel engines, cannon and gun barrels.

The gold star award is the fourth national recognition of the production efficiency of the corporation. It was the first industrial organization to be awarded the Maritime "M" burgee; in August and September, 1942, two of its units received Army and Navy "Es."

Radiomarine Corporation

The USMC "M" pennant, Victory Fleet flag and Merit badges for all employees were awarded to the Radiomarine Corporation of America on March 8 for their production of marine radio equipment for war, Rear Admiral Howard L. Vickery, U.S.N., made the presentation and Arthur M. Tode, honorary president of the Propeller Club of the U.S. served as chairman of the presentation ceremonics.

Turl Iron and Car Company

The Turl Iron and Car Company, Newburgh, New York (nearing the century mark in the manufacture of machinery), received the "M" award of the United States Maritime Commission and the Maritime flag in a noon ceremony at its plant.

The firm was established by John Turl in 1845 in a blacksmith shop in New York City. The initial product was machinery for the sugar plantations of Louisiana. In 1905 the plant was moved to Newburgh and its products expanded to include condensers, evaporators, juice heaters and plantation railway equipment.

In 1941 the Commission awarded contracts for manufacture of auxiliary condensers, evaporating plants and fuel oil heaters for its Liberty ships. By maintaining delivery schedules for condensers despite growing demands which increased from 10 to 130 per month, the company won additional contracts and the honors of the Commission

Sperry Gyroscope Company

At token ceremonies held in all plants on March 2, the Sperry Gyroscope Company were awarded a renewal of their Army-Navy "E" award, allowing them to fly the "E" flag with the added star for an additional six months.

Trill Indicator Company

The Trill Indicator Company of Pittsburgh and Corry, Pa., has been notified that it has won the Maritime "M" award in recognition of outstanding performance in the production of engine indicator equipment required for the U. S. Maritime Commission's shipbuilding program. At the presentation ceremonies the Maritime "M" pennant, the Victory Fleet flag, and Labor Merit insignia will be formally presented by Colonel Willard F. Rockwell, Director of Production of the Maritime Commission.

The Trill Indicator Company manufactures steam engine indicators which are vitally important members of the instruments which help to keep the engines of the Liberty ships going at top efficiency. Trill engine indicators are indispensable for measuring the horse-power and for adjusting the intricate valve mechanism of the engines—on the perfect functioning of which depends the power and maneuverability of the ships.

Of the three concerns in the United States that manufacture engine indicator equipment, the Trill Company is the only one that has built steam engine indicators exclusively for more than 40 years. It is also the only company which now devotes its entire facilities solely to the production of this type of instrument. Because of this specialized experience the Trill Indicator Company has been entrusted with the manufacture of steam engine indicators for ships of the United States Maritime Commission's mighty Victory Fleet.

De Laval Steam Turbine Company

The Navy Board for Production Awards has granted a renewal of the Navy "E" award made in May, 1942, to the De Laval Steam Turbine Co., Trenton, N. J., for excellence in industrial production. The new award is for a period of six months, dating from November 15, 1942, and carries the right to add a White Star to the Navy "E" burgee flown over the plant. The formal presentation of the Navy "E" burgee with the White Star added was made at ceremony held in the De Laval plant on January 27th.

Pacific Coast shipping men who left important berths to enlist continue to make their mark in the combat forces. Word received here announces George P. Pell, former assistant freight traffic manager McCormick Steamship Company, has been elevated to lieutenant colonel from major. He is commanding officer in the Army Air Corps, Baker Dock, Tacoma.

New T.E.M.A. President

C. S. Pattor of the American Locomer via Company, was elected Press dent of the Liveline Lax hancer Mannfacturer. Association at the annual meeting ledd in Lebouary in New York City.

Mr. Patron has been prominent in the activities of TEMA for many years and has served several terms on its executive columntee. The Association has materially contributed to the war off it through standardization of tubular equipment designs and is very active in promoting increased production of these trems vital to war undustry.

At the American Locomotive Company Mr. Patton is manager of sales for the Alco Products Division.



ROBERT H. MORSE, JR.

Appointment

Fairbanks, Morse & Co. announce the appointment of Robert H. Morse, Ir., as general sales manager.

Mr. Morse comes to his new duties with a long and varied experience, beginning in 1916, in the service of the company and its subsidiaries. This experience includes 10 years in the manufacturing divisions, followed by extensive sales experience as manager successively of the Cincinnati, Dallas, and Boston Branches, and the Stoker Division; and more recently as assistant sales manager.

He enlisted in the regular Army in 1917 and saw considerable experience in France during the first world war. He was married in 1920 and has three children. His oldest son, R. H. Morse, III, is now serving as an ensign in the United States Naval Reserve.

Through the Red Cross, word has reached the U. S. that Gilbert Monreal and Mike Baragya, former members of the crew of the President Harrison, are being held in a Shanghai prison camp.



WHITMAN-BARNES "E" AWARD

COL. A. M. KRECH, U.S.A., presents an "E" pin to M. J. Kearins, president of Whitman & Barnes, as Detroit's Mayor Edward J. Jeffries smilingly looks on. The Army-Navy "E" Award flag was presented by Admiral Wat. T. Cluverius, U.S.N. (Ret.), at the ceremonies in Detroit on February 25. M. J. Kearins, president, accepted on behalf of the company.

George H. Lacy, manufacturers' sales representative at San Francisco, will be away from his Embarcadero and California beat for a few weeks. He is making the big circuit into the East where he will visit his factory principals, Boston-Lockport, L. W. Ferdinand Company and Wilcox Crittenden in New England and the H. S. Getty Company headquarters in Philadelphia. Good connections on your trip, George, and Happy Landings!

Jack Hamilton is stationed at the Richmond Shippards, Richmond, Cal., for the U. S. Maritime Commission as senior hull inspector. Walter Ingram, who was with Bay Area shippards during World War No, I, is stationed at Richmond Yards No, I, as master ship tester under Al Burtucci, testing superintendent.

. . .

R. B. Wallace has been named Washington manager for Moore-Mc-Cormack Lines. He was formerly in the Philadelphia office.

Frank Leahy, widely-known boiler inspector, who served with the United States Steamboat Inspection Service until the outbreak of the World War No. 2, and then joined the U. S. Coast Guard with the rank of lieutenant-commander attached to the Port Control Office in San Francisco, has been promoted to the rank of commander and transferred to take charge of the Coast Guard headquarters, Pittsburgh, Pa.

James "Jim" Wilson, veteran of more than a quarter of a century service with the U. S. Steamboat Inspection detail, but now attached to the U. S. Maritime Commission, is in Portland from his Eastern headquarters supervising the Commission's investigation of the accident that "hogged" the hull of the tanker Schenectady, built at the Kaiser yards in Oregon,

Lieutenant C. W. Lowith, USNR, who was on active sea duty in the Solomons and Maskan waters during the early Jap assault and later transferred shoreside to teach cadets in engineering at the U. S. Maritime Commission's Coyote Point Station, is on a sick leave.

Lieutenant Lowith was chief engineer on Matson ships before being called into service.

E. A. Macdonald was for years chief engineer for the Matson Navigation Company. Since December 7 he has been a licutenant in the Navy, and for a year was attached to the U. S. Maritime Academy at Coyote Point, Just now he is in Oak Knoll Government Hospital recuperating from a serious illness, the result of his sea service in the South Pacific.

R. C. Ray Jones, port engineer for the General Petroleum Corporation, stationed in Wilmington, Calif., is recovering in Seaside Hospital, Long Beach, following a serious operation. He is expected to be back at his berth the end of this month.

James Stewart, who served with Bethlehem's Union Plant for twenty-seven years, is now with the U. S. Maritime Commission's engineering department located at the California Shipbuilding Yards, Terminal Island, California.

C. G. Reeves, well known in maritime circles, is one of the busiest executives in the shipbuilding world. He is with California Shipbuilding Corporation as port engineer. He has a personal interest in the record production of this concern as he has three sons in service. They are Joe, a bombardier; Walter, a paratrooper with the Marines and William, a gunner in the Navy. Reeves knows just what our ships mean.

PETER B. KYNE

On Friday afternoon, March 26, two events separated by over six decades of time and some two thousand miles of sea distance came very closely together. The first of these events was the arrival of a little 300-ton bark, the Emma Claudina, at the Hawaiian Islands, in the early eighties. The second event was the presentation of the Army-Navy "E" Award "for outstanding production of war materials" to the Construction and Repair Department of the Matson Navigation Company, at 500 Beale Street, San Francisco, towards the close of a March day in 1943.

The first event marked the beginning of regular transport service between the Mainland and Hawaii, when Captain William Matson brought the Emma Claudina into port after a three-week run from San Francisco. This was really the beginning of the Matson Line which, by 1917, when Captain Matson died, had eight ships in regular service under the house flag. It was a development which was to see nearly half a hundred Matson ships in the water when the urgent call for ships came from our Government on that gray morning after Pearl Harbor, one of the stoutest arms of our American Merchant Marine.

But the operation of a fleet of ships includes many things, much

MATSON "E" AWARD

more than providing captains and crews and sailing the ships. The Matson pattern of operation early required the complete maintenance of ships as well. It is at this point that the pertinance to the March 26 ceremony, on San Francisco's waterfront, becomes apparent.

For, in 1927, in order to keep ships in perfect repair at all times, and with a minimum time in port, George K. Nichols, an experienced man with ships, was brought from the East and given the job of organizing a Construction and Repair Department. The fact that, even on December 7, 1941, this department had already been commissioned by our Government to take over important war work testifies to the efficiency with which Mr. Nichols has built up this department in the intervening time.

Captain Joseph W. Fowler, Assistant Industrial Manager of the Mare Island Navy Yard, who presented the Army-Navy "E" to Mr. Nichols, emphasized the efficiency of this Department, calling attention to its performance of what Navy officers themselves called "miracles," even performing one "miracle" of conversion "forty days ahead of the original anticipated completion date!"

Apropos of such performances, Captain Fowler said: "If I know anything about American industry and American workmen, we're going to show the world that the enterprises flying the Army-Navy "E" are going to do a better and faster job than any plant flying the swastika!"

"The 'E'," concluded Captain Fowler, "stands for 'Excellence.' But it also stands for 'Expectation' of even greater achievement in the future."

Mr. Nichols, speaking for the men and women of the Department, said: "We regard this honor as no ordinary award, for coming from our Country, for work done for our Country, at a time of its greatest need, it becomes an inspiration for every one of us." Mr. Nichols said he realized that his Department was only a cog in the Country's total machinery serving our Armed Forces, but "our purpose is to make our cog mesh with our Country's total machinery as effectively as we can." But he pertinently pointed out that "we had the nucleus of this plant, when the national emergency arose, with skilled people to operate it, for Matson has always conceived its operation in terms of the future, as well as the present. Therefore, because of this peacetime beginning, we were able to carry through quickly the wartime expansion asked of us by our Government."

Lt. Colonel John R. Reilly, Officer in Charge of Ship Maintenance and Repair, Army Transport Service. San Francisco Port of Em-

Main Yard, Construction and Repair Dept., Matson Navigation Company.



barkation, made a token presentation of Army Vavy "E" pins to three representative employees "This war," said Colonel Reilly. "has been called a war of transportation The Matson Fleet has played a large and vital part, and your Construction and Repair Department has been an essential, able, and efficient part of this great base of San Francisco." The pins, he said, recognize work well done by "this Department's employees, and are a visible symbol of distinguished service to your Country.

Mr. Joseph C. Beale, one of the recipients of the token pins, replied on behalf of his fellow workers, stating: "We know we can't win, unless we turn in a winning job on the production front, just as our boys are turning in a winning job on the fighting front." Mr. Beale closed with the pledge to keep the "E" Flag flying over the plant. "I make this pledge," he said, "for every man and woman of this Department."

Chairman of the day was the famous author Peter B. Kyne, who, in his opening address, spoke reminiscently of his friend, Captain William Matson. He told how "this Swedish sailor came to San Francisco, became a citizen, and got a ticket to skipper the Emma Claudina." He said it was sad to think that Captain Matson



George K. Nichols, manager, Construction and Repair Department, Matson Navigation Company, receives the Army-Navy Burgee from Capt. Joseph W. Fowler, U. S. N., assistant industrial manager, Mare Island Navy Yard.

could not have survived to see "the extent to which his genius, supplemented by his successors in management, has contributed to the sea power of his adopted country, to which he gave such loyal effort. For," said Mr. Kyne, "we might have the largest and finest Navy in the world, but without a merchant marine, we would not have sea power. We would not be able to carry our troops and munitions of war to foreign battlefields, where this war must be won, and as a result, our liberty would not only be in jeopardy, it would be non-existent."

Many celebrities were guests at the ceremony, among them Vice Admiral John W. Greenslade, USN; Captain Philip E. Roach, USCG; Mr. Joseph F. Marias, President of the Board of State Harbor Commissioners; Mr. Edgar Rainbow, President of the Bay Cities Metal Trades Council; Mr. A. S. Gunn, General Manager, Shipbuilding Division, Bethlehem Steel Company; Mr. Joseph A. Moore, Jr., President of Moore Dry Dock Company, and Mr. George A. Armes, President of General Engineering & Dry Dock Company.

The Coast Guard band furnished the music for the ceremony. An employee color guard raised the "E" flag on a temporary flagpole at the side of the speakers' platform. The many employees of the department eligible for "E" pins received them the day following the eeremony.

It was a colorful occasion on Friday afternoon, March 26, down on the San Francisco waterfront. Colorful because so typically American. For, as Mr. Kyne pointed out, across it fell the benign shadow of an event which reached back over six decades, and two thousand sea-miles, when a free American citizen began to put together the first elements of his dream of ocean-borne transportation.

Lt. Col. John R. Reilly presented "E" pins to three employees. Left to right: Lt. F. P. Newton, Fred R. Narr, superintendent, Construction and Repair Department; Mrs. Frances Hales, Lt. Col. Reilly; Capt. Joseph W. Fowler, George K. Nichols, manager Construction and Repair Department; Vice Admiral John W. Greenslade, W. P. Roth, president, Matson Navigation Company.





E. C. LOWE

Visiting Coast

E. C. Lowe, general sales manager of John A. Roebling Sons Company, accompanied by C. G. Williams, vice president and general manager, are now on their annual trip visiting Pacific Coast branches in Seattle, Porland, San Francisco and Los Angeles, Mr. Lowe started with the company thirty years ago in San Francisco as clerk and was appointed president of John A. Roebling Sons Company of California in 1940. In 1941 he became general sales manager of the company at Trenton.

Mr. Lowe was succeeded as president of the California organization in 1941 by Willard G. Marks, who was formerly branch manager of the company at Los Angeles. E. S. Trask, who has been with the company eighteen years, is now manager of the San Francisco branch, having succeeded Mr. Lowe to that position in 1940.

A chap whose only sea experience was riding as a passenger between San Francisco and Los Angeles before the war, or validating tickets as a member of the passenger department of the Grace Line, is now skipper of a speedy Naval patrol boat in the Jap-infested waters in the South Pacific. He is Lieutenant James B. Duffy, Jr., son of J. B. "Jim" Duffy, assistant passenger traffic manager for the Santa Fe Railway.

Lieutenant Duffy has been in the Navy since 1940. He was graduated from Pensacola, Fla. He served as executive officer on a destroyer and then asked for duty in combat waters.

F. C. Ninnis, California operating manager for the Sheppard Line, announced the appointment of R. V. Howie, as assistant manager. The San Francisco general offices are in the Mills Building.

Edward H. Harms, who held the rank of commander in the U. S. Coast Guard, stationed in San Francisco to handle placement of deck officers, was granted a release to fill the post of

assistant War Shipping Administrator on the Pacific Coast. His headquarters are Port of Los Angeles. Harms, until his Coast Guard enlistment, was assistant operating manager for the Mc-Cormick Steamship Company.

A new member of the Oregon State Pilot Commission is E. S. McGrath, Northwest manager for Sudden & Christenson with Portland headquarters. He is one of the best-known men in the Columb'a River marine field and his selection by the Governor was the result of urging from prominent shipping leaders in Oregon.

The U. S. Army Transport Service made public promotion of Captain Albert W. Gatov to the rank of major at Fort Mason. He was attached to the Interocean Steamship Corporation, Los Angeles, before the war.

Ralph Putzer, formerly chief engineer on the liner President Taft, is now engaged in ship production work at the Moore Dry Dock Company, Oakland.

John Davidson, secretary of the American-Hawaiian Steamship Company, is another well-known Pacific Coast steamship executive drafted into war service. He is now shuttling between Washington and New York as aide to Roger D. Lapham, chairman of the Board, American-Hawaiian, who is chairman of the Labor Relations end of the war endeavor.

Indefatigable Charles L. Wheeler, vice president and general manager of the McCormick Steamship Company, is slated for the presidency of Rotary International, in tribute to his long years in behalf of this organization.

Mr. Wheeler's duties with McCormick are enough for most any executive, but in addition to Rotary he is active in the Propeller Club of the United States and one of the most enthusiastic supporters for the cadet training of American youths for the merchant marine service.

Armand de Pichon, remembered before 1939, when France entered the war, as one of the top-flight executives on the Pacific Coast for the French Line, is now Lieutenant Pichon. He is stationed at Fort Mason in the Transport Service.

A deal was recently closed giving the Luckenbach Steamship Company ownership of the Montgomery dock property in Portland, Ore. The purchase price was in excess of \$100,000. Robert E. Piper, district manager, said the purchase was part of the post-war expansion program tentatively decided by the directors.

Harry Dorr, widely known in Pacific Coast marine circles and Los Angeles manager for Norton, Lilly & Co., is the new president of the Los Angeles Steamship Association. He succeeded Perry S. Newcomb, Pacific Coast manager for the Barber Steamship Lines, Inc.

The Cramp Shipbuilding Company recently announced the election of Henry E. Rossell as president and general manager and Garland Fulton as vice president of the company. The new president is a Commander and the new vice president a Captain on the retired list of the U. S. Navy, Commander Rossell has been associated with Cramp in an advisory capacity since the yard reopened in 1940 and Captain Fulton has been chief engineer since 1941. Rear Admiral William G. DuBose, U.S.N. (Ret), who relinquished the office of president and general manager at his own request, will devote all of his time to the chairmanship of the executive committee of the company's Board of Directors.

(Page 107, please)

CAPT. GARLAND FULTON, U.S.N. (Ret.)



COMM. HENRY E. ROSSELL, U.S.N. (Ret.)



Sales and Service

CONSOLIDATED ASHCROFT

HANCOCK CO., INC Consolidated Safety Valves. Ashcroft Duragauges, Hancock Valves, American Tempera- DORAN COMPANY ture Instruments.

CARRIER-BRUNSWICK INTERNATIONAL, INC

Refrigeration and Air Conditioning Equipment. WARREN STEAM PUMP CO., INC.

Centrifugal and Steam Pumps for All Services. ILG ELECTRIC VENTILATING CO.

Blowers, Fans, Unit Heaters.

FISHER GOVERNOR CO.

Reducing Valves, Pump Governors and Control Specialties.

MARKEY MACHINERY CO., INC. Deck Machinery, Steering Gears.

Air Whistles, Acid Resisting Valves and Fittings. KINGSBURY MACHINE WORKS, INC.

Thrust and Journal Bearings. WATEROUS COMPANY

Waterous Rotary Pumps. DIAMOND POWER SPECIALTY CO.

'Diamond' Soot Blowers, Gauge Glasses. Smoke Indicators.

COLBY STEEL & ENGINEERING CO.

Shipperd and Material Handling Cranes - All Types.

THE LANDLEY COMPANY, INC. Lifeboat Davits and Equipment.

CUNO ENGINEERING CORP. "AUTO-KLEAN" Mechanically Cleaned Filters.

DAVIS ENGINEERING CORP. Paracoil Water Heaters, Evaporators, Heat Exchangers.

NATIONAL ENGINEERING PRODUCTS, INC. COPALTITE Compound.

THOMAS C. WILSON, INC. Tube Cleaners for all kinds of Boilers.

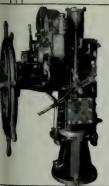
Paracoil MARINE EO

Evaporator . . . Oil Heaters . . . Oil Coolers . . . Grease Extractors . . . Water Heaters Distillers . . . Feed Water Heaters . . . Exhaust Gas Boilers . . . Heat Exchangers

ENGINEERING CORPORATION

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Plant and General Offices, ELIZABETH, N. J.



The Allan Cunningham Line

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MARKEY

Hydraulic Safety Steering Telemotor-as supplied to the U.S.C.& G.S. "Explorer."

MARKEY MACHINERY CO.

INC. Seattle, Washington

MARINE AUXILIARY MACHINERY

"Cunningham" Air and Steam WHISTLES

DORAN COMPANY

Manufacturers

SEATTLE, WASH.

THE U.S.S. SAN FRANCISCO

Another Hero of the Battle of Guadalcanal Came Through with Flying Colors . . . and so did her

Here she is, home again, in the port of the city after which she was named-the gallant cruiser the U.S.S. SAN FRANCISCO-after her victorious fight against the Japanese in the epic sea battle off Savo Islands in the Solomons. Home again—to receive a rousing welcome from a proud America. Home again-to get ready for further heroic action.

Throughout the fierce action in which the U.S.S. SAN FRANCISCO took part, the fighting cruiser counted on her Warren Pumps to perform their important , and Warren Pumps, too, came through with flying colors. Warren Pumps have been serving the Navy, the Coast Guard, and the Merchant Marine with reliability and economy-for more than 40 years.

WARREN STEAM PUMP COMPANY, INC.

WARREN, MASSACHUSETTS



LIGHTWEIGHT ALL-METAL BOAT

The non-fouling qualities, as well as the strength of an alloy containing 70 per cent copper and 30 per cent nickel, have been given a thorough test in months of trial of a unique cruiser built by Revere Copper and Brass. Much of this period has been in the service of the U.S. Coast Guard, by whom the vessel was taken over for patrol duties. During Coast Guard operation, she has been driven between 5000 and 6000 miles, from New Bedford, Mass., to Florida and back again. Over 90 per cent of this mileage has been at speeds of between 25 and 30 miles an hour in salt, brackish, and fresh waters varying in temperatures from very cold to tropical.

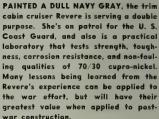
Practical application of the cupronickel alloy for further use as a material of boat construction, of course, must wait until after the war, since the alloy is high on the priority list of critical materials and is released only for highly restricted purposes. It has been widely used in the past for condenser tubes on marine and naval ships and salt water piping—a service which demands resistance to fouling, strength, and high resistance to the corrosive action of hot sea water.

The Revere, as the boat was christened, was almost entirely completed before priorities were invoked. The original purpose was to demonstrate the value of the 70/30 alloy for providing a sturdy lightweight craft with a rust-proof hull.

Though the Revere has no frame, as the term is generally applied in boatbuilding, and though the thickness of the hull is only 1/16 of an inch, she has experienced little trouble in her arduous months of patrol duty. Despite the large number of floating objects struck at high speed, only one slight case of damage to the hull was reported. This was a slight crack in one of the plates over the propeller, which was easily and rapidly repaired by welding.

Though the hull was painted both

A TERRIFIC BATTERING for 5000 miles, at speeds between 25 and 30 land-miles an hour, with little damage, is the record of the Revere. This is a particularly striking record in view of the fact that the hull plates are only 1/16" thick. Striking many floating objects while on Coast Guard patrol, the only hull injury was a cracked plate over propellers, which was easily repaired by welding.



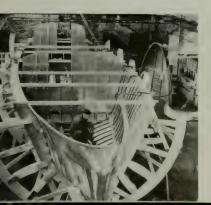
above and below the water line, this coating was worn off considerably under water areas and provided an opportunity for thorough study of cupronickel resistance to marine growth. Experts who examined the hull when the Revere was hauled out for the plate repair were amazed at its condition in respect both to damage and freedom from fouling. This latter quality is one in which extensive interest has been aroused because of the high marine speeds in large and small craft attained since the beginning of the war. These speeds constantly are being stepped up.

Even with a small boat, marine growth fouling can measurably reduce high speeds after only a few days' exposure to salt water. Heretofore nonfouling paints have been the chief recourse of builders. The temporary nature of such protection, of course, is obvious. And in many cases—especially with naval craft in times of emergency—frequent repainting is not practical.

The Revere is 45 feet long and was built to the designs of B. T. Dobson, naval architect. Use of 70/30 alloy for the hull made it possible to build the Revere without making allowances for subsequent thinning of the plates by corrosion, thus materially reducing the deadweight. The plates are fastened together by spot and electric welding.

Each plate is flanged on all four edges and welded at the flange to similar flanges on adjoining plates. Thus, the skin of the hull becomes an integral part of a distributed system of bracing that is stronger than a separate frame.

All external fittings, such as struts, shaft logs, rudder assemblies, propellers, and shafting are made of Monel, in accordance with modern ideas of small boat design and construction. This alloy, containing approximately two-thirds nickel and one-third copper, is practically the reverse of the cupro-nickel hull in composition. In addition to its exceptional resistance to corrosion by salt water, it is further distinguished among the high nickel alloys by its strength and toughness. Furthermore, it is galvanically congenial with the 70/30 alloy. The shaft is equipped with cutless rubber bearings mounted in a Monel shell.



PACIFIC MARINE REVIEW

STEADY AS YOU GO!

(Continued from page 83)

key will be modified to allow that,

In the 'tween decks it would be better to say that the bottom tier of dunnage should be spaced with the top tier making good floor, and the bottom tier should be laid with careful consideration of the position of the 'tween deck scuppers, so that any leakage may have ready access to the scupper.

Your question number 2. Another old standby of no practical use unless you have a wind sock or a means of getting a bearing on the smoke if your vessel smokes, and an anemometer to measure the wind velocity. The answer is $E \times N$ force 6.

The solution for this problem is arrived at from an old edition of Bowditch. In the editions prior to 1938, Table number 32 was used to convert apparent direction and velocity of wind to true. Probably the tables to solve your navigation problems that you used at the inspector's had a Table number 32 in them.

This problem is one of resultant forces and could be solved graphically, or by the use of the traverse tables: but both methods are involved, and I do not recommend your wasting any time on them, for the elimination of a condensed table in the revised edition of Bowditch speaks plainly enough of the value of, or need for, this information.

Your third question sent me searching everything nautical that I have ever encountered, to no avail, and I had about come to the conclusion that you had made a mistake in reading or remembering the question, when I dug out an old Webster's unabridged dictionary and found what might be the answer.

Webster's says that at one time a certain portion of a vessel was set aside for the crew, and in such space they could stow cargo that they solicited and delivered, and the earnings therefrom they took unto themselves in lieu of stipu-



REMLER is in this picture too with announcing equipment which multiplies the spoken command and translates words into action. At every stage of the engagement sound-amplifying equipment directs the men aboard each ship and transmits commands to other ships and planes, timing each blow to the split second for the final knockout

Remler workers, who make some of this equipment, like to think it plays a decisive role but even if it makes only an insignificant contribution we are proud of the fact that we have the privilege of serving our Navy and Merchant Marine

To other manufacturers of war communication equipment we extend the offer of our co-operation and if you think we can help with a part of your job, phone or wire—

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REMLER

Announcing & Communication Equipment

ELECTRICAL PLUGS AND CONNECTORS



Important Numbers
for boats equipped with

FATHOMETERS

To give the best service to FATHOMETER-EQUIPPED vessels we maintain branch inspection offices at these major seaports. Submarine Signal Service from its own offices is at the immediate command of the Ship's Captain.





* * * Our entire facilities are devoted to the successful prosecution of the war. Our manufacturing program includes engine testing equipment for the United States Army, Navy, and Maritime Commission. TRILL Indicator Equipment is specified for 95% of all "Liberty" ships now in service or under construction.

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ENGINE TELEGRAPH DIALS
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"A substitute for critical metals"

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lated wages. Hence Portage is a term used for crew's wages.

I cannot imagine where the Bureau of Marine Inspection ever dug up a question of that nature, unless they resorted to the reading of sea stories, and having asked it, why they would deny a man a license for having failed to answer it

In view of the fact that you have passed all previous examinations, and that when you receive your Master's License you will be through with these examinations for good and all, and from then onyour future will be in your own hands, and of your own making, I would suggest that you go back to the inspector that examined you, when next you can, and tell him that you have studied hard since you were up and failed, and he will undoubtedly give you some other questions to answer, and you will pass without any further trouble. You cannot be as unlucky again in the choice of questions as you were in your examination.

Be sure to read up on and become familiar with convoy signals, problems and methods, for any day now, they may take official cognizance of the existence of the war, and start asking questions of that nature, which would certainly be more timely than questions relative to portage or the amount of canvas required to make a suit of sails.

Remember also, the Bureau of Marine Inspection is a busy of ganization these days, that the examiners are very busy, and like all hard-working people in the war effort are at times inclined to lose patience like the rest of us. Their's is a thankless job.

DEEP FILLET WELDING

(Continued from page 69)

given exactly four minutes of instruction, which allowed her to get the feel of the arc and learn the proper travel speed. She then welded four fillets in the flat position, 12 inches long in the size equivalent to a \$3,5-inch fillet. The total time consumed was not over 12 minutes from the time the subject struck her first arc. The test was made under the same conditions as all other tests connected

with our researches into the "deep fillet" technique and the specimens were subjected to the same physical tests of tension and macro-structure. The results showed that the strength of the weld was in excess of the requirements of the American Welding Society for a ¾-inch fillet, and the quality of the weld can be judged from the accompanying photographs.



Official U.S. Navy Photo

HOISTS STEERING GEARS .

WINCHES

MANUFACTURING COMPANY

Builders of Fine Hoisting Machinery for Over 68 Years

WINDLASSES . CAPSTANS

> TOWING ENGINES

KEEP POSTED

(Continued from page 79)

proved in the crucible of war. When America's Victory comes, the lives of merchant seamen will continue to be protected by this equipment.

In order that proper service may be rendered the war effort in matters pertaining to the sale and delivery of American Chain Ladder Company products destined for use on the Pacific Coast, Western Chain Ladder Company of 2153 Sacramento Street, Los Angeles, California, has been organized for the purpose. The management of this company will be under the supervision of the Crossfield Products Corp., well-known pioneers and manufacturers of mastic deek covering.

New Type Duct Clamp

To help aircraft manufacturers meet the production demands placed upon them today by the United Nations, Marman Products Co., through their engineering department, have developed a revolutionary new type of air and oil duct clamp.

According to G. A. Cunningham, general manager for Marman Products Co., the new Marman clamp has four distinct advantages over old fashioned clamps: efficiency, adaptability, ease of installation and weight.

Exhaustive tests by leading West Coast aircraft manufacturers, have shown that this clamp has positive equalized circumferential loading that exerts equal pressure at every point, particularly important now with the ever-increasing loads being placed upon hose and duct lines in today's

THESE MARMAN AIR AND OIL DUCT CLAMPS open similar to the one at the bottom, permitting wrapping around hose section without its removal.



ships and planes, and it can be used over and over as its clamping efficiency is maintained indefinitely.

It is especially built for high-pressure, hot or cold installations for aircraft, automotive, tank or marine engines and assemblies. Its diameter sizes (1% to 38 inches) conform to any convex surface, whether square, oblong, circular or triangular.

Users declare that the time-saving in motor assembly due to its patented design, which permits the clamp to be quickly and easily wrapped around the hose and duct section without its removal and tightened the desired amount with one hand, amounts to several man-hours per plane and has speeded up production materially.

A new building has been recently completed which is to be used exclusively for the manufacture of the Marman Duct clamp on a production line basis. Here, too, a division has been set up to handle special clamp orders or any of the many clamp problems that come up in the marine engine assembling plants.

Elgin Gets New Representative

R. E. Chase & Co. with headquarters in the Tacoma Building, Tacoma, Washington, and branch offices in Seattle, Spokane, and Portland have been appointed by Elgin Softener Corporation, Elgin, Illinois, as district representatives in the Northwest territory.

They will handle both the Elgin industrial and marine line of water conditioning products, which include water softeners, filters, purifiers, boiler water conditioning systems and water treating chemicals.

Exhaust Blowers For Shipyards

To provide a constant circulation of fresh air for men working in double bottoms, deep tanks, engine rooms and other confined spaces, West Coast shipyards are using many Utility specially designed portable blowers.

Safety engineers recognizing the vital importance of a constant supply of fresh air cooperated with electrical engineers and others in developing this equipment. The blowers are an adaptation of the heavy-duty blowers manufactured by the Utility Fan Corporation of Los Angeles.

These blowers are light enough to be easily portable, yet supply a volume of air sufficient for four hose inlets. This means that one blower can exhaust fumes from four welders, or supply fresh air to other workmen in confined areas.



UTILITY SHIPYARD BLOWER with fabric discharge duct arranged to remove large volumes of fumes.

The exhaust and intake openings on the Utility blower scroll are the same size, which permits the blower's use for either exhausting fumes or supplying fresh air. When used for suction purposes, up to four hoses can be attached to the intake manifold, permitting the removal of fumes from four different places. By moving the hose manifold to the discharge side of the blower scroll, fresh air can be supplied to the shipfitters or other workmen.

Utility shipyard blowers are equipped with 5-hp, 220/440 volt, 3-phase motors, 50 or 60 cycle and operate at 3600 rpm. Heavy wire guards protect the revolving fan.

Adhere Spraymask

A new waterproof, protective and abrasion-resistant mask for plastic glass bomber noses and windshields simply sprays on . . . and peels off. Adhere, Inc. of Los Angeles, for ten years in the business of producing adhesives for display advertising, and, since the war, devoted entirely to production of edge-gummed masking paper and special insignia masks, now announces Adhere Spraymask.

The Spraymask is easily applied with an ordinary paint spray gun, and afterwards may be peeled off in a



IT'S BECAUSE -

. it has so many important war jobs to do . . . so many jobs that cannot be done as well or as quickly by any other method.

Steel castings save time and labor because they save machine work and reduce cutting and fitting—by combining many parts in one steel casting.



Now, when our industry must produce on a scale never dreamed of before, it is not surprising that the steel foundries of America are producing castings

at three times their pre-war rate. We know the victorious day of peace will come and, in resuming peace-time production, NIKELADIUM will again be as essential in peace-time products as it now is in protecting our American way of life.

NIKELADIUM Steel

GLOBE VALVES . CHECK
VALVES . ANGLE VALVES . GATE
VALVES . FLANGED FITTINGS

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JAEGER CAPSTANS WINCHES, DECK **AUXILIARIES** OUR ENGINEERS ARE AT YOUR SERVICE THE JAEGER MACHINE COMPANY 907 DUBLIN AVE., COLUMBUS, OHIO Branches and Service in 100 Principal Cities

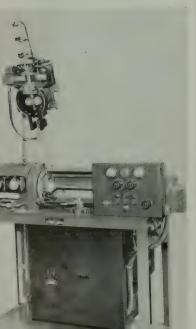


ADHERE MASK
Sprays on . . . peels off.

sheet, as demonstrated in the illustration. Major aircraft companies who have been experimenting with its use have found it particularly adaptable for spraying formed plastic glass parts such as bomber noses and gun turrets, for protection until the plane is on the line ready to fly.

Although primarily used by aircraft plants, Adhere Spraymask has many as yet unexplored uses in other types of production requiring a temporary protective mask or coating against paint, grease, abrasion, wind, or weather.

The Spraymask's protective film is tough enough to prevent abrasions and ordinary scratches during the assembly process as well as being resistant to paint for masking purposes. It is waterproof, has no chemical action on the plastic, and is impervious to paint



thinners and ordinary solvents. When dry, it not only peels off neatly in a sheet, but actually tends to clean the surface.

The semi-cloudy appearance while spraying is an aid to quick and even application. Yet the mask dries clear and transparent. For continued protection against weather, the mask may be left on for weeks after all painting and camouflaging are completed, until the plane is ready to fly.

Equipment for Automatic Arc Welding

Complete equipment for automatic are welding with heavily coated electrodes in cut lengths has been announced by the General Electric Company. The essential elements of this equipment also have been made available in order that automatic are welding heads originally designed for operation with thyratron-controlled coiled electrodes can be converted for successful welding with stick electrodes.

The equipment is particularly suited to work where one or more complete joints can be made with a single electrode, such as in the welding of shells, wheels, and tubular assemblies where the starting and finishing ends of a single weld bead overlap. It has been used to make edge, lap, fillet, and groove welds. Applications have included the welding of machine gun water jackets, tank wheels, ordnance shells, and refrigerator parts.

The equipment is similar to that used for welding with coiled electrodes, except for the electrode feed rolls and electrode guiding device. The mechanism includes a clamp for holding any standard stick electrode, and for transmitting current to the electrode. The clamp is attached to the end of a feed rod, upon which two feed rolls operate to maintain the proper arc voltage through automatic thyratron control. The electrode is accurately guided to maintain the arc in a predetermined location. Limit switches govern the extremes of movement in either direction.

To operate the equipment, the welding operator inserts an electrode in the clamp, presses the **Start** button, and the equipment strikes and maintains the arc, feeding the electrode at the proper rate to maintain the preset arc voltage. Welding continues until stopped by a limit switch, at which time the electrode clamp returns to starting position to receive a new electrode. When more than one joint is to be welded with one electrode, an additional limit switch is used for each intermediate stop.

G-E AUTOMATIC ARC WELDING equipment with stick electrodes set up for making an edge weld on hemispheres for a float valve chamber.

Strainer Prevents Pump Damage

Fitting on the suction line, this new sand strainer has been developed for marine applications, giving all types of ships positive protection against the entry of sand into pumps, water cooling jackets and pistons. The strainer unit consists of non-metallic disks held between a solid metal plate and an adjustable tension spring, the entire unit being enclosed in a cast bronze, cast steel, or cast iron suction line strainer body. Sand is easily cleared from the strainer by removing a single wing nut



ZURN SAND STRAINER

on the cover, lifting out the strainer unit and releasing the tension on the disks.

Wide use is being made of these new sand strainers in ships of every type. A smaller model, for installation at the head of the intake line to the pump, is obtainable for small boats and operates similar to a shallow well pump head. Both types are now available from the J. A. Zurn Mfg. Co., Erie, Pa., manufacturers of marine product specialties and plumbing drainage products for over 40 years.

New Poison For Barnacles

An entirely new anti-fouling toxic, of extremely high efficiency, has been developed by the Marine Division of the Boston Varnish Company, and is now available to the marine industry.

Concentrating its attention on the vital problem of the protection of ships' bottoms against fouling and corrosion, the Boston Varnish Marine Division several months ago instituted a series of researches in collaboration with two well-known laboratories specializing in the field.

The result of this research has been the development of a new type of toxic

WHO'S WHO

(Continued from page 98)

General Steamship Corporation Enlarges

The General Steamship Corporation signed leases in Match which will enlarge their quarters to include all or the the ground theor of the Mers and Exclusive berilding other than the area occupied by the Marine Exchange and lobbies, according to R \ Winquist,

Harry R. Door, Los Angeles man ager for Norton, Lally & Company, is the new president of the las Angeles Steamship Association. He assumes the position formerly held for two and a halt years by Perry S. Newcomb, Paeine Coast manager of Barber Steamship I mes, Inc.

More space and added personnel are necessary for the Shepard Steamship Company, due to the increase in business since a number of new Liberty ships are being assigned to the company R. V. Howie has been appointed assistant manager on the staff of F. C. Ninnis, California operations manager. The firm has almost doubled the space it has in the Mills Building.

Joseph F. Marias, president of the State Board of Harbor Commissionets, reports that has from the alone San I cance co's even redes of water trust totaled onl \$242 for the twelve months of 1942. This is believed to be a record for any large port in the DATE OF

Shortly after Pearl Harbor, stringent regulations coverning all persons eneased in work or havin, business along the 'I ront were instituted . . .

Awarded Medal

Edwin Joseph O'Hara, 19, United States Merchant Marine Cadet Corps midshipman of Lindsay, California, who lost his life while manning a Liberty ship gun single-handed to fire the last five shells into an enemy raider, has been posthumously awarded the Merchant Marine Distinguished Service Medal by the United States Maritime Commission.

Mrs. Elma O'Hara, mother of the boy, received the medal March 15 from Commander Arthur O. Brady, U.S. N.R., District Merchant Marine Cadet Instructor, at her home. At the time of the posthumous presentation, services in memory of 50 Cadet Corps midshipmen who have given their lives at sea since the start of the war were conducted at the schools of the Cadet Corps. These are the United States



CARLETON SHUGG, who has just been appointed production manager of the Todd Hoboken Dry Docks, Inc., a unit of the Todd Shipyards Corporation.

Merchant Marine Academy at Kings Point, Long Island, New York, and the Merchant Marine Cadet Basic Schools at Pass Christian, Mississippi, and San Mateo, California.



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This sight flow indicator has pipe size flanged inlet and out-let and electric alarm connections. Can be used right or left hand. The indicator "B" is hinged at "H" and a light compensating spring "G"



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Est. 1897





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agent which can be used in any of the normal vehicles at the present employed in ship bottom paints, but which is in itself entirely new. Testpanels of steel plate coated with paint containing this new toxic have been, and still are, exposed in tidal waters at various points on the Atlantic and Gulf Coasts, with results which clearly demonstrate the superiority of this new anti-fouling agent.

The illustration shows a typical result of these exposure tests; the panel at the left, coated with a well-known conventional anti-fouling paint, shows a heavy infestation of barnacles after six months' exposure; the right-hand panel, coated with B. V. M. anti-fouling paint embodying the new toxic, exposed under identical conditions in

the same test-rack, shows no lodgment of marine growth whatever.

These tests have produced such truly amazing results that officials of the U. S. Maritime Commission and of the U. S. Navy have made special trips to the marine testing station to inspect them.

The forty-three year history of the Boston Varnish Company is well known to all users of paint, afloat and ashore; and now, through the able and experienced field staff of the Boston Varnish Marine Division in shipping and shipbuilding centers throughout the country, B.V.M. anti-fouling and anti-corrosive paints are available to private shipbuilders, ship operators, the U. S. Navy and the U. S. Maritime Commission

An All-Plastic Badge

An identification badge for war workers, which it is claimed will save approximately one ton of muchneeded metal on every 40 thousand badges made, has just been placed upon the market.

In keeping with the national conservation policy of using only nonessential materials wherever possible, this all-plastic badge is made of a strong, durable, attractive plastic possessing all the attributes wanted in a badge—light weight, thinness, durability, strength. This badge keeps its shape; non-burning, non-sparking, tamper-proof, has no sharp edges, and meets Government requirements.

It is but 1/6" thick and so light that, when attached to any lightweight material, it does not hang in an unsightly manner. It looks neat—part of a well-groomed operator, fitting into the present-day stream-lined picture.

Made in two parts—the specially designed, reinforced plastic case, cast by the latest injection method, and the crystal or face. Both of these parts have specially formed edges which, when assembled, fit tightly into one another, and becomes a one-piece unit.

The Plasticseal badge is completely tamper-proof. It requires no tools or special equipment for its assembly.

The clasp can be had in two forms

—a spring pin type which is set into
the case; and the other, a safety catch,
neatly and securely riveted onto the
back of the case.

This badge is made by Royal Emblem Co., New York, N.Y. and its trade name is Plasticseal.

TEST PLATES, one untreated, one treated with B. V. M. new anti-fouling paint.

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Masking Paper Ready to Apply

Maskins, paper in rolls, with the edge already gummed and ready to apply, is a new timessaver produced by Adhere, Inc., Los Angeles, Calif., who specialize in developing improvements on the ordinary paper-and-tape method of maskins.

The advantages claimed for Adhere edge-gummed masking paper in rolls are that you handle only one piece and thus avoid cutting and handling both a large sheet of paper and the masking tape. In fact, women operators in one war plant went a step further and conceived a novel method of slipping the roll over the forearm and applying it direct from the roll as shown in illustration "A."

This ready-to-apply masking paper lends itself readily to masking flat surfaces, straight edges, striping, and for covering protruding parts. It is especially useful in the maintenance department of any air, marine or mobile equipment.

Typical users, such as aircraft manufacturers, have adopted this simplified method in their painting and camouflage departments, for masking wing de-icers, wing catwalks, and such protruding parts as porcelain insulators, gun mount sockets and control knobs as shown in illustration "B." A vertical masking apron may also be formed by turning and folding the paper upwards as in "C."

The paper is light in weight and treated to resist paint. The gummed edge is protected with cover tape.

Adhere masking paper in rolls is produced with single edge gummed, or with both edges gummed. Standard rolls are 200 feet long and in widths of 3, o, 9, 12, 18, 24 and 30 inches. Other widths are available on special order.

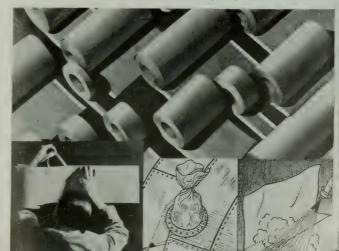
Shiftograph Dial

Donald M. Nelson, Chairman of the War Production Board, and his associates are seriously concerned over the increasing amount of absensteeism in war industries. They feel that failure to rotate shifts on an equitable basis is in part responsible for this absensteeism. They believe that an instrument called the Shiftograph offers a systematic procedure for the rotation of shifts.

The Shiftograph is an instrument designed by the George S. May Company, the world's largest firm of business engineers, for use as a perpetual work-shift schedule. By simply turning a dial, the user can tell at a glance what shifts certain crews will work, the days they work, and their days off. This instrument provides for several different plans of rotation, wherein all employees are treated alike, for they share equally in desirable and undesirable work shifts.

More than 150,000 of these instruments are being distributed free of charge by the George S. May Company maintaining executive offices in New York and Chicago, with subsidiary offices in other principal cities.

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Here you see illustrated a very simple and practical "bench service" that is providing hot coffee, soups and other refreshing "pick-ups" to workers in industrial war plants... an actual photograph taken in a war plant.

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The AerVoiD vacuum-insulated carrier makes service to workers near their work easy and simple AND SAVES VALUABLE PRODUCTION MINUTES.

A box, α chair, α bench or window ledge, any vacant space α few inches square, serves as α resting place for AerVoiDs while serving.

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Over 100 large industrial war plants already have AerVoiDs in service. Write for new circular stating why AerVoiDs are going into war plants in constantly increasing numbers . . . in the words of users themselves.

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BOY SCOUT LEADERS NEEDED

by Leonard S. Mosias

Chairman Scout Alumni

HE BOY SCOUT movement is part of America's way towards safeguarding American principles and ideals. Its object is to teach and mold into the character of the youth the spirit of cooperation, tolerance, self-reliance and good citizenship. The youth of today are the leaders of tomorrow. It is essential that they receive the proper training and influence which will set them upon the road that all good and useful citizens must travel.

In close cooperation, the Sea Scouts have developed a wartime program to intensify training in the subjects of most practical value to the Navy, Coast Guard, and Maritime Service. With eagerness and enthusiasm, boys are studying signaling (blinker and semaphore), practicing small boat handling, going deeper into the science of navigation, and intensifying on marlin-spike seamanship. Just go yourself on any week-end down to the San Francisco Sea Scout Base at the Aquatic Park, foot of Van Ness Avenue, and you will be sure to see dozens of youths going through all phases of the training program from thrilling boat drills to systematic signaling.

The public recognition of the importance of the Sea Scout program is shown by the fact that several new Sea Scout ships have recently been organized in the San Francisco Area Council. The program is an important part of the war effort. It needs to expand so that all boys who want to become Sea Scouts can have the opportunity. The biggest obstacle is lack of leadership. Because of this, hundreds of boys are being denied the chance of participating. Many men who have led for years have gone into the armed services. They have to be replaced in order

to maintain efficiency in training.

The San Francisco Area Council announces a training program for anyone interested in Sea Scout Leadership.

At the council headquarters, 105 Montgomery St., each Monday evening, starting at 8:00 o'clock, a course is being conducted for mates, skippers or anyone interested in Sea Scouting.

Ten hours of instruction including elementary piloting and navigation on San Francisco Bay and its tributaries, will qualify a man for a pilot's license, an essential for handling of boats on San Francisco Bay. Other instruction given at the same time will include handling of ropes, and the elementary requirements of seamanship and Sea Scouting.

For those who wish to do a public service, there is none better in civilian life than Scout leadership. It ranks at the top of civic services in these United States. To be able to give leadership, companionship, example, friendship and quality to a group of earnest youth is a real privilege and equal responsibility. The boys of America are asking for your leadership. Give them this opportunity . . . volunteer today!

NECROLOGY

(Continued from page 92)

Prior to coming to Utah for Columbia Steel, Mr. Keigley had been employed by the United States Steel Corporation at the Gary Plant at Carnegie, Ill., and the National Tube Company at Lorain, Ohio.

He was a native of Madrid, Iowa, and a graduate of Iowa State University. Besides his widow. Mrs. Gladys Keigley, he is survived by a daughter, Claire E. Keigley, and a son, Richard B. Keigley.

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Hot off the Press

CATALOGS OF TODAY BECOME TECHNICAL HANDBOOKS OF TOMORROW

Care and Conservation of Brushes, a new booklet issued by the Osborn Company, world's largest manufacturer of industrial brushes, urges proper care of brushes as a war imperative.

Use of brushes for finishing the surfaces of warships, cargo vessels, tanks and trucks and other war equipment, is placing heavy demands upon their

durability.

Because many sea lanes are closed, inferior substitutes such as horsehair and substitute cements must be used. Under the war-emergency program, brushes are made with only 55 per cent of the customary hog bristle, which gives the paint brush manufactured prior to the war its wearing quality and ability to stand up under rough treatment.

Furthermore, every effort must be made to conserve the vital materials that go into brushes, such as bristles,

rubber and steel.

The booklet gives many other helpful details on the way to break in a new brush and preserve it. It may be obtained by writing The Osborn Manufacturing Company, 5401 Hamilton Avenue, Cleveland, Ohio.

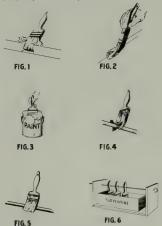


FIG. I—Never pound, daub or force the brush into corners or other narrow places as shown.

FIG. 2—Never use brush edgewise.
FIG. 3—Never submerge the entire length of the bristle into the paint.

FIG. 4—Never use a large, flat brush when working on pipes or other round surfaces in this manner.

FIG. 5—When working on pipes or other round surfaces, use brush in this manner.

Pictorial Identification, a four-page, two-color broadside, folder No. 1433-M, just issued by Photographic Equipment, Inc., Pittsburgh, Pa., describes the Model B WIM Identification Unit.

The major improvements of this unit over the Model A include a white washable background, self-leveling easel base, increased counterweight capacity, finger-printing equipment, easily demountable light brackets for increased portability, elevator can't-stop ratchet lock, and a choice of size of numbers.

The absolute accurate height indicator is an outstanding feature, yet can be removed easily if desired.

Cochrane Deaerators, a comprehensive, 36-page treatment of tray-type deaerators atomizing deaerators, deaerating hot water generators and cold water deaerators, recently issued by the Cochrane Corporation, Philadelphia, Pa. Sections are devoted to: flow diagrams including photographs of installations described; corrosion control; pH control; and metering deaerating equipment with V-notch recorder and electrical systems for recording flow at a distance, when the recorder is located on a centralized panel board.

Cross-section photographs and line diagrams in color clarify the operation of the Cochrane deaerators.

Illustrations are shown of various designs that are constructed to meet space limitations and operating requirements.

Accessories' equipment is illustrated and described showing the importance of these accessories in maintaining trouble-free operation of the entire power plant. A copy of this publication will be sent on request.

Twistite High Speed Clamps: Tool designers, assembly plants, welders, and metal-, wood- and plastic-working industries will be interested in a new bulletin just issued by the Michigan Clamp Company of Jackson, Michigan. The bulletin describes Twistite push-pull pressure units, C-clamps and holding devices of special design into which Twistite units can be built. The Twistite pressure unit eliminates the slow, time-consuming full-threaded feature of holding and positioning tools. Copies of this bulletin will be sent free on request.

Protective Wear: the Strauss Company, of Pittsburgh, Pa., Bulletin 143, describes their line of head and body

protection for men and women industrial workers. The literature includes protector helmets for both men and women, welders' helmets, rain and storm capes, and a new line of safety hats and breast protectors for factory women.

Copies of the new literature are available upon request.

Rust: The Black Bear Company, Inc., of Long Island City, New York, has issued a new broadside which is designed to help war-production men who are concerned with rust-proofing. The folder explains the uses and methods of application of Black Bear Anti-Rust "O," and Black Bear Anti-Rust "U,"

The "O" compound is designed expressly for outdoor use; Black Bear "I" is recommended for indoor use only. Both types are widely used for the protection of machine parts, castings, stampings, fabrications, assemblies, etc., for shipment or storage. Readers wishing copies of this folder should address requests to: Black Bear Company, Long Island City, New York.

Plastics for Production Parts, just issued by Creative Plastics Corp., illustrates the almost unlimited possibilities of plastic parts in war-production applications. The folder utilizes photographs to illustrate nearly a score of important plastic parts recently produced by Creative for essential war use. The broadside emphasizes the fact that all of Creative's plastics fabrication is done without molds, and to closest tolerance specifications. Copies of this folder may be obtained from Creative Plastics Corp., Technical Sales Dept., Brooklyn, N. Y.

NoDrip Handbook: Getting right down to the bottom of the condensation drip problem, this 32-page booklet tells how to prevent and cure damaging condensation and sweat that forms on metal pipes and fixtures, on basement walls, and on ceilings of concrete, wood, or plaster.

Instructions as to application, coverage, drying time; complete listings of the many uses for NoDrip; and other valuable data—all in an ataglance contents list right on the front cover of the book, which is probably the most complete study available today of condensation and its cure.

Copy of the Handbook will be sent on request to the J. W. Mortell Company, Kankakee, Illinois.

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BOOK REVIEWS

Questions and Answers for Marine Engineers—Books II, III, IV and V; compiled by Captain H. C. Dinger (ret.); bound in green board, with blue stamping; published by Simmons-Boardman Publishing Corp., New York. Price \$1.00 per book.

These books are compilations of the Marine Engineers' Question and Answer column, run for many years in the technical magazine, Marine Engi-

Book II is entitled "Engines," which should be "Steam Engines," since there is no mention of diesel engines. Reciprocating engines properly occupy over two-thirds of the book. Turbines and reduction gearing have a chapter each, or 57 pages out of a total of 186.

Book III covers auxiliaries in 140

Book IV treats the applications of steam and heat in producing power. In this book, one question concerns the diesel engine as compared to the steam engine. Neither the question nor the answer has any bearing on the title of the book. The compiler should

Book V is entitled, "Powering, Fuel Economy, Propulsion, Propellers, and

have omitted the question.

Shafting," and covers those subjects in 98 pages.

The questions in these books are chosen especially to help the marine operating engineer and the books will be very helpful to the younger members of that trade in studying for their raise-in-grade examinations.

How to Navigate Today; by M. R. Hart; 100 5" x 7½" pages, with numerous diagrams and tables; bound in light green buckram, with dark green stampings; published by the Cornell Maritime Press, New York. Price \$1.50

This little volume gives in a simple, straight-forward manner all the essentials of intelligent navigation by the standard method used in the U. S. Navy. Instead of beginning with astronomical details, the author makes his approach with a simple logical discussion of the principles involved.

It is the purpose of this book to save hours of mental anguish for the many young men who are learning to navigate today's mass-production shipping.

Coast Guard Law Enforcement; by Ridsdale Ellis; 205 pages, 5" x 71/4";

bound in dark blue buckram, with red stampings; published by Cornell Maritime Press, New York. Price \$2.50 net.

The Federal law affecting the U. S. Coast Guard has been built up piecemeal over a period of 150 years. The efficiency of the thousands of new officers and men in the Coast Guard depends very largely on their ability to answer the questions: "What is the law in this case?" "Where can I find the law?" "How do I apply the law?"

Ridsdale Ellis, a member of the Supreme Court bar and well acquainted with maritime law, saw the necessity of providing ready and simple answers to these questions, and so he compiled this excellent, well-indexed, and properly documented handbook. The book is small enough to fit snugly in a coat pocket and comprehensive enough to cover practically any legal circumstance which a Coast Guardsman might contact in his work.

Meteorology for Ship and Aircraft Operation; by Peter Kraght; 373 pages, 5" x 74"; numerous illustrations, diagrams and tables; bound in gray buckram, with red stampings; published by Cornell Maritime Press, New York. Price \$3.00 net.

Peter Kraght (pronounced Kraft) is senior meteorologist of American Airlines, Inc. That position spells the fact that he has to be right. A weather man forecasting for the dailies, or for radio broadcast to farmers must be right occasionally, or on the average, but a weather man responsible for the flights of large passenger-filled air transports has no leeway; he must be right all the time.

Lieut.-Col. Karl S. Day, U. S. M. C. Res.' Assistant Flight Superintendent, American Air Lines, says of this book: "This, thank God, is a meteorological textbook written in language understood by aircraft pilots and those who control aircraft operations."

Says the author in his introduction: "Winds are of primary importance to airmen and seamen." This book "is designed to assist airmen and seamen in obtaining a working knowledge of meteorology as it applies to their particular weather problems. The pattern of discussion is based on lectures given airmen and seaman by the author, and on the sequence of questions asked during these lectures."

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Pacific IMPRINE REVIEW

Large Shipbuilding Contracts

production has reached such astronomical figures that it does not register as it should on the imagination of the taxpayer. We all know that the ways will be kept full for the duration, and that five ships a day delivered is the goal for this year. With a lot of Liberty yards not then in production, existing yards had reached almost four a day during December, 1942, so why should they not turn out five a day in 1943?

However, to an old shipbuilder, there is something of a thrill in two recent announcements by the Maritime Commission.

The first, dated April 22, awarded 469 merchant ships to eight shipyards.

The second, dated April 24, awarded 460 merchant ships to seven shipyards.

This makes a total order for 929 merchant ships to be built in 15 shipyards.

Seven of the yards are Pacific Coast yards, and these seven got 498 ships. The details are listed in our "On The Ways" section, elsewhere in this issue.

Jack Frost and a Tanker

Schenectady, first tanker built at the Swan Island yard, Portland, suddenly crack while sitting quietly at the outfitting dock after completing a successful trial run?

This question is answered in a report recently issued by the American Bureau

of Shipping. Boiled down to simple terms, this answer is:

A subnormal steel plate in the sheer strake, defectively welded to the deck plating at a point where the design of the structure localized considerable locked up heat stresses due to failure on the part of inexperienced welders to follow recognized standard welding procedure, started to tear when it was subjected to the added strain of unequal contraction caused by a sudden drop in temperature.

Since all of these factors except the last were present during the trial of the ship, we may confidently affirm that Jack Frost just split Henry Kaiser's first tanker as he has split so many other natural and manmade structures since the beginning of time.

It was very fortunate that he did so at the outfitting dock. The trouble was discovered in time, the obvious remedy applied, and the next tanker tested to the limit showed no sign of failure.

Motorboat Owners Attention

Marine Inspection Section of the U. S. Coast Guard, those clauses in the Motorboat Regulations Act of 1940, which were to go into effect on April 25, 1943, and which require new equipment for motorboats, are to be held in abeyance until the end of the war. The decision was reached at Coast Guard headquarters in Washington in view of the fact that necessary war materials make it virtually impossible for owners of motorboats to obtain several of the specified items.

KEEPING PACE

with Britain's

by Kathleen Palmer

(The illustrations are British official photographs)

LTI-COLORed cards, pieces of elastic, and a few pins, play an important part in plotting Britain's convoys and warships. On enormous charts and maps in the Operations Rooms, somewhere in Britain, the course of every ship and aircraft is plotted. A convoy's course is marked out by elastic held in place by pins, and along this route are moved little colored cards, each color representing a different type of ship. The courses of warships and flights of escorting aircraft and planes on sweeps are similarly shown. Even Axis ships and suspected lurking U-boats appear on the charts.

One glance at these maps tells the naval officers just how their forces are dispersed or concentrated. If one ship is having trouble, they can see where the nearest ships are which can be called upon for help.

Wrens and Royal Navy men, working in close cooperation with their colleagues in the R.A.F., are the plotters in this realistic wartime game. Twenty-four hours a day, every day in the year, they keep their "men" moving across the boards in response to signals from the ships and planes those "men" represent.

The course and speed of each convoy is known, and at intervals a Wren climbs the step-ladder in front of one of the maps and moves the miniature ships to their new positions. In another room this chart is duplicated on a large table, so that a double check is kept on the convoy.

Piece by piece the story of a convoy, begun many weeks before the convoy sails, is gradually built up and recorded in one of the huge log books. Each signal received by the Wren Plotting Officer is carefully tabulated and filed. When a new watch comes on duty in the Operations Room, it reads through all the signals received since it was last on duty, and thus gets a clear mental picture of the present state of affairs and the events leading up to them.

Here is an advance signal coming through the message tube telling of an attack. The Duty Commander communicates this immediately to the higher authorities.

Above: As she is to become a plotter, a category for which complicated training is unnecessary, the Wren, during her fortnight's probation, when not attending lectures helps the steward keep the depot clean.

Below: In the Operations Room a naval message arrives with news of shipping movements. The messenger hands the signal to the Chief of Staff.



Conveys

The map shows the positions of the nearest warships and planes. Signals are sent out, the Admiralty gives special instructions, and the atmosphere is tense and anxious. A damaged ship drops astern of the convoy and is left behind with a naval ship left to protect her. A cross indicates this event on the map. A couple of Axis ships are damaged. They, too, are recorded.

Suddenly a Wren reaches for the card symbolizing an enemy aircraft, and takes it off the scene. The signal has come through that the plane has fallen flaming into the sea.

Rescuing forces are reported nearing their objective. Will they arrive in time?

Another signal comes through. The damaged merchantman is sinking and is being abandoned. Another signal, and a Wren climbs the ladder, removes a card and tears it in half. How small an action depicting such a large tragedy!

The time drags on. Then comes a signal that the danger is over, at least temporarily. British relieving forces have been sighted, and the attacker is making off. The Operations staff relaxes mentally for a second and sets about checking up and adjusting positions, and again taking stock of forces available.

And when the convoy eventually comes in, the captains and commodores visit the Operations Rooms to have a look at those

A signal has been sent, ordering a destroyer to proceed to the scene of action.



Naval messages are filed and ready for reference. On the walls are charts covering all entrances to the ports. The Wren is directly responsible for checking shipping movements on the numbered map.

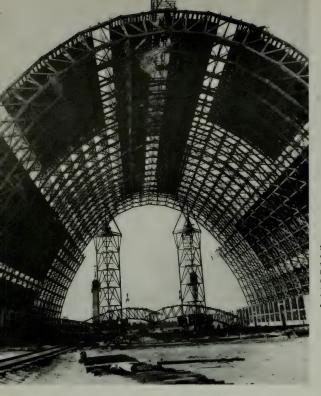
maps and relive their hazardous

The plotting of costal convoys is carried out in much the same way, although the wall maps are not quite so extensive. Miniature locats, represented by colored cards pinned to little wooden blocks, are moved from square to square by Wrens sitting round a large table. As with the oceangoing convoys, the positions of all aircraft and ships are plotted, and Wrens with headphones plugged into the plotting tables are in direct communication with the ships.

In an adjoining room, the positions of the ships are shown on a smaller wall chart. A Wren comes from the plotting room to make the alterations at short intervals. Charts showing the direction and force of wind and state of tide line the walls. Other charts show the activities of Coastal Command of the R.A.F., with the duties for the day for escorting aircraft and planes on sweeps over certain areas. A graph shows the length of time taken to reach the duty area, the time spent over the area, and the time taken to return to base.

As fast as the plotters see one convoy safely reach its destination, so the anxiety of another awaits them in the never-ending battle to get the supplies to the right place at the right time.





Soaring timber arches, clear-spanning 237 feet, distinguish the largest blimp hangar, now nearing completion for the U.S. Navy "somewhere in the continental U.S.A."

THE RECENT announcement by the U. S. War Production Board that structural timber used with steel ring timber connectors saved 400,000 tons of steel last year has been followed now by the disclosure that the U. S. Navy has employed this system of construction to build the world's largest hangar for non-rigid airships.

In this gigantic structure, now nearing completion "somewhere in the continental United States," soaring timber arches rise 153 feet from the floor, clear-spanning an unobstructed area 237 feet wide and 1000 feet long.

All of the timber in the hangar—more than three million feet in arches and roof sheathing—is pressure-treated with a mixture of ammonium and boron chemicals to make it flame-proof. The hangar is the first large-scale use of fire-resistant wood to replace steel.

From any engineering point of view, this is the greatest structure ever erected of timber, at any time in any place, but its significance to the profession will be seen in these words from the official War Production Board statement which discusses the project:

"Such a structure could not have been built of wood by ordinary methods without the use of timber connectors."

However, with connectors, and with heavy impregnation of flameproofing chemicals, this vast, multiple-truss building has been built, and, moreover, built not as a temporary, inflammable makeshift soon to be torn down and replaced by something else, but, on the contrary, designed and engineered in its own right as a permanent naval installation. While flameproofed structural timber was selected originally in order to conserve steel, from the standpoint of pure engineering interest it is only incidental that 2050 tons of structural steel thus was saved.

Starting with the split ring as the most versatile type of the group, timber connectors include toothed rings, claw plates, shear

Timber In War

by Holman Harvey

plates and grids, one or another of which types is suitable for joining wood to itself or to any other structural material.

Timber connectors are manufactured in the United States by the Timber Engineering Company of Washington, D. C., a subsidiary of the National Lumber Manufacturers Association, which has pioneered in introducing the device to the fields of engineering and construction during the past decade. Taking the initials of the company, they are known as Teco timber connectors, and it was to the use of these connectors that the WPB referred. Fourteen American factories now are engaged in manufacturing Teco connectors and the special tools with which they are installed.

In ten years, over 100,000 structures of 600 types, in many countries, have employed Teco connector construction. During America's rearmament, scores of large Army, Navy and Maritime Commission projects have been built of timber with Teco connectors-\$115,000,000 worth of offshore and foreign bases; a \$65,-000,000 ordnance plant; a \$52,-000,000 magnesium plant; a \$30,-000,000 cantonment; a \$10,000,000 shell-loading center; and an aircraft plant in which 27,000,000 board feet of lumber, including 5800 timber-connectored trusses, was used. The Army alone has used Teco connectors in 99 different types of structure.

The Teco connector system also has been used widely in Canada, Australia and New Zealand, and, to a degree, in the United Kingdom, over a period of years, particularly since the company launched the research and engineering activities which led to the

Connectors Structures

general recognition of timber as an engineering material. As in the United States, the system has projects throughout the world.

In all of this, the saving in structural metal has been enor mous, because timber, used with one pound of steel in the form of Teco connectors and their accompanying bolts, washers and miscellaneous hardware, takes the place of 13.4 pounds of structural steel. Over 30,000 tons of metal were saved in the newly opened Douglas cargo transport assembly plant-the world's largest factory built of wood.

How a Connector Works

Timber connector rings vary in size from two and one-half inches to eight inches in diameter. The ring is split across at one point, the split being in the form of a tongue-and-slot. The purpose of the tongue-and-slot split is to provide for possible expansion or contraction of the timber. The split operates as follows:

between two pieces of timber to form a joint, each facing piece first is grooved to receive the ring. the groove of one of the two timber members and the other half into the groove of the other member, so that, when the two members are joined, face to face, the

To insert a timber connector One-half of the ring is to sink into

ring is wholly imbedded between them. The circular grooves, each dimension slightly larger than the unexpanded circumference of the ring to be inserted. When the ring is forced into the groove, the tongue - and - slot split is forced apart slightly. When the ring is thus imbedded in the timber with its split slightly parted, it can expand or contract with the wood and form at all times a tight and rigid connection.

The connecting through-bolt, which formerly carried the stress in timber joints, is relieved of stress by the imbedded connector ring, and now serves principally to hold the two timber members together, face to face. In the past, weakness at the bolted connections had retarded the use of timber as a heavy structural material. Pound for pound, timber has the strength of steel, but its bolted joints were its Achilles heel. The timber connector spreads the load on a timber joint over practically the entire cross-section of the wood, and thus brings into play the full structural strength of the

Other types of connectors have teeth which are forced into the wood, no pre grooving being nee-

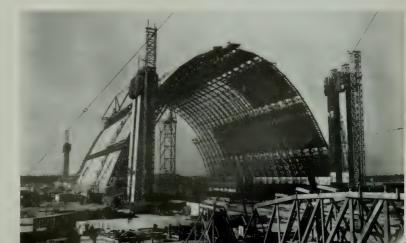
search on the application of the connectors to American lumber was conducted by the Forest Products Laboratory of the U.S. Forest Service, where most of to day's science in the use of Ameri thousands of tests on timber connector joints were made. The National Committee on Wood Utilization introduced to America the European practices of timber construction.

Twenty-eight American colleges have collaborated in the research program, notably the Massachusetts Institute of Technology and Pennsylvania State College. So great is the interest of engineering colleges in the new system of timber engineering that, in the past five months alone, 200 teachers, in 122 universities, located in 46 states, have requested and been supplied by the company with educational literature for classroom use.

The statement by the War Production Board follows, in part:

"The steel-ringed timber connector, which is used to increase the strength of joints in wood construction, saved more than 400,000 tons of steel for essential war production in 1942.'

Big house for U. S. Navy blimps nears completion. This world's greatest timber structure is built under the Teco connector system of timber engineering as a permanent naval installation. Clearspan timber arches rise 153 feet, provide 237-foot unobstructed opening. Length is 1000 feet.





Above: This accommodation ladder of impressive dimensions is one of many being manufactured by the company. Approximately 35 feet in length, it weighs over a ton. Construction is principally of oak with fender rollers of lignum

MODERN FURNITURE for

WEBER EQUIPS SWAN ISLAND OIL CARRIERS

FROM SHOWCASES TO SHIPS

is the wartime slogan applied to the war production program of the Weber Showcase & Fixture Co., Inc., at Los Angeles. Conception of this unique phrase was born shortly after the company diverted its manufacturing facilities to war, and a huge cowl ventilator program got under way as the company designed, engineered and constructed "Old Ironsides,"-world's largest hydraulic press, which is used to die-stamp these ventilators.

Shipyards of the nation became conscious of the company's facilities as carload after carload of die-stamped cowl ventilators began arriving at various yards for installation aboard U. S. Maritime Liberty cargo vessels of the EC-2 type.

When the U. S. Maritime Commission engaged the Kaiser Shipbuilding Company of Portland, Oregon, to construct a large quantity of oil tankers, they selected the E. F. Hauserman Company of Cleveland, Ohio, as prime joinery contractors to furnish all the ships' equipment,

including more than 25,000 pieces of ships' furniture.

Negotiations with Commission officials and the Hauserman company resulted in a contract being placed with Weber for the construction of the ships' furniture for the oil tanker contract.

All the furniture for the offices and staterooms of the captain and chief engineer, and the quarters for officers, engineers and crew members, including the radio room and hospital bay, will be furnished in this contract.

Construction is principally of wood, metal being used only for such items as towel racks, grip rods and pipe berths. The stern tube bearings, also included in this contract, present an exceptionally interesting part of this work. These bearings are manufactured of lignum vitae, which is the heaviest wood known, weighing 72 pounds per cubic foot. This wood is cut into staves and driven into the steel lining core to form the interior bearing or lining on



TANKERS

which the shaft will turn. After the wood is securely wedged into place, a special boring machine is used to smooth up the interior of the lining so that a bearing fit is made for the shaft, which meas ures 21½ inches in diameter.

The furniture is constructed of such woods as birch and maple, finished in harmonious shades of marine green, French gray and gloss white, to blend in with the decorative scheme of the rooms in which the various pieces are to be installed.

Radically departing from the old-time custom of making ships' furniture of extra rugged construction, this furniture has been designed and manufactured to give a modern, streamlined appearance that gives beauty and appeal to a most durable type of construction. This furniture has been constructed so as to provide the maximum amount of space in a minimum layout. Rounded corners have taken the place of the old conventional square type design, with the result that injury from contact with sharp angles and corners has been reduced to the very minimum.

Manufacturing methods of the most modern type have been employed to give this equipment ample provision of strength and durability without the penalty of being clumsy in appearance and design.

Furniture for installation in each office of the captain and the chief engineer will consist of office furniture, bookcase, settee, flat-top desk, conference table and chair; while furniture for each

statemon will consist of bed, chiffonier, chest of drawers, radio table and easy chair

Quarters for officers, engineers and crew members will be furnished with beds or pipe berths,

The plant is now totally converted to war production. Shown here is part of the mill. Modern machinery such as this helps speed production of furniture for the tankers.

chest of drawers, chittomers, desks, portable wardrobes, book racks and radio shelves, and all officers' rooms are to be equipped with showers

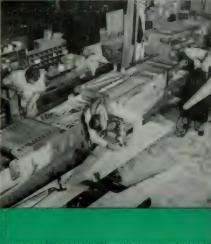
When completed, this equipment will fill more than 115 rail road cars and will require a ware house of 40,000 square feet to store the material prior to shipment.

A cross section of the special production work carried on to complete the accommodation ladders. The photo shows but a small portion of the woodworking assembly division.

An interesting note about this particular contract is the fact that more than 70 different key and

(Page 96, please)







H. H. ASHINGER

About 1904, a process was invented by Haefley, a Swiss engineer, for the manufacture of a new material called Micarta, and consisting of a series of layers of paper or fabric with or without mica bonded together with shellac under heat and pressure. The invention was then purchased by George Westinghouse, and was immediately employed in the manufacture of round insulating tubes by the simple process of rolling in successive turns on mandrels. This process was not successful in the manufacture of laminated plate or molded forms because of poor bond between layers.

In 1907, Dr. L. H. Baekeland invented a synthetic resin which was unique in that it could be first softened then hardened under heat and pressure. Mr. Westinghouse saw the possibility of its use as a binder in laminated composition and particularly for making electrical insulating plate.

Micarta blocks cushion engine vibration.

The principal ingredients of the new synthetic resin were phenol, a by-product of coke manufacture or petroleum distillation and formaldehyde, a by-product of wood alcohol manufacture. The latter

(Abstract of paper presented before the Philadelphia Section, Society of Naval Architects and Marine Engineers, February P. 1943. The author is manager, Micarta Application Department, Westinghouse Electric & Mig. Co.)

Applications of Composition Marine

Bearings

by H. H. Ashinger

is a gas which to be handled commercially is dissolved in water.

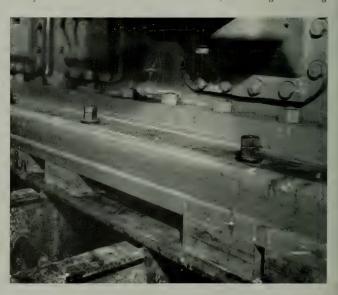
To make good plate, layers of paper or fabric are impregnated with liquid resin and dried. The stack is then placed between the platens of a hydraulic press under high temperature and pressure. Under these conditions, the final chemical reaction called polymerization occurs, binding the fibrous material into a new homogeneous composition.

Up to 1914, little thought was given to the use of synthetic resin bonded composition plate for other than insulating purposes. At that time, an engineer was troubled by the noise in the gears of an automobile lighting generator. To eliminate the noise, rawhide and fiber gears were tried unsuccessfully. In a search for some-

thing better, the new composition was used with very encouraging results. Its high strength, light weight and quietness in operation have since that time made this composition a most practical material for many gear applications.

Before 1933, the available grades of composition had been tried unsuccessfully in stern tube bearings. That year a special type of resin was developed for composition steel mill bearings and was introduced also into marine bearings. An installation was made on the Steel Exporter on November 3, 1933.

The shaft diameter was 165%", and the length of the bearing was 62". The initial clearance between the bearing and the shaft liner was .080". The last time this bearing was measured was on March 1, 1940, at which time the clearance was .203", indicating a bearing



wear of roughly s" in 612 years

The acceptance of composition bearings by commercial ship-winers from 1933 to 1941 was slow because, in considering its use, there was a tendency to compare with lignum vitae only the cost per pound.

But as its use spread, operating records soon indicated longer wear, reduced frequency of repairs, ease of installation, reduced lay time, low coefficient of friction, increased engine speed. When these important operating economies were recognized, the use of resin-bonded composition bearings became widespread.

A typical installation was made on the Bethore, running between Baltimore and Valparaiso, Chile, carrying approximately 22,000 tons of ore and making roughly seven round trips of 10,000 miles each per year. Resin-bonded composition bearings were installed on the starboard side August 15, 1936—lignum vitae was installed on the portside at the same time. When the shafts were drawn on April 15, 1939, the composition bearing showed approximately

		Recommended (Between Shaft	Liner and			
Diameter Over Shaft Liner		Resin Bonded Composition Material Bored Dry				
1	all Filler					
			.022			
11/2			.024			
2			.026			
21/2			.028			
3	***************************************		.030			
4			.033			
5			.036			
6			.039			
7			.042			
8	***************************************	************************	.045			
9			.047			
10	******************		.049			
11			.051			
12	***************************************		.053			
13			.055			
14			.057			
15			.059			
16			.061			
17			.063			
18			.065			
19			.067			
20			.068			
21			.070			
22			.072			
23			.074			
24			.076			
25			.078			
26			.079			
27			.079			
28						
48			.082			

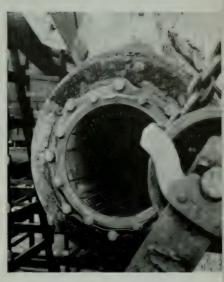
FIG. I

045" were with no appreciable west on the Josephiner The hig fitting vitae be ring showed ." wear and the slott liner was worn from s" to 3 16". The portside lignum vitae bearing was replaced with composition at that time This ship had a broken propeller blade on one trip, during which the speed was adjusted to hold vibration to a minimum and the composition bearing took the beat ing. The owner of this vessel estimates a saving of several thou sand dollars since composition bearings were originally installed.

About a year ago, the Bureau of Ships, after exhaustive tests, approved the use of synthetic resinbonded composition bearings on naval vessels. Since the war started, and the critical situation on rubber has been so forcibly brought to everyone's attention, the use of composition bearings has extended rapidly. In addition to some 500 commercial vessels, composition bearings are now installed on over 300 auxiliary naval vessels such as sub-chasers, mine sweepers, escort vessels, tugs, rescue vessels, supply vessels, auxiliaries, aircraft carriers.

Marine bearing composition is a uniform material machined to a predetermined snug-fitting clearance. This engineered bearing is installed in a minimum of time, eliminating the waste and labor of fitting encountered in lignum vitae bearings. Spare bearings are easily stored in shipyards or aboard ship for speedy replacement. The material does not deteriorate or dry out in storage.

The type of construction which experience proves most desirable to marine architects and engineers is the so-called on-edge, stavetype bearing. The complete bearing is made up of two halves, each half consisting of a series of longitudinal staves wedged between keeper strips on each side. Each stave is accurately machined from plate material with the layers or laminations running edgewise or perpendicular to the shaft liner. Certain staves have lengthwise water grooves to provide for cir-



Micarta stern tube bearing.

culation of lubricating water. Water grooves are omitted on the center staves to give more bearing surface in the area of higher pressure. The clearance between bearing and shaft liner is indicated in Fig. I. Since the composition is an organic material, it will absorb some water, and in so doing, will change dimensions slightly. This change is complete within 48 hours immersion and amounts to less than .0075 inches per inch of bearing thickness.

The frictional characteristics of composition are relatively the same as those of edge-grain wood but considerably lower than those of rubber.

Rudder stock and pintle bearings are made of both stave-type and tube-type construction. Lubrication grooves are machined on the inside surface. Rudder bearings are used for both grease and water lubrication.

Composition bearings have also been applied to deck winches, anchor windlasses and pumps.

Pump valves and piston rings of composition material have been employed in pumps of all types.

Training in Shipyard Supervision

TRAINING OF SHIPBUILDING SUPERVISORS

by "The Instructor"

The methods and ideas used in this course were in the main developed by foremen and supervisors attending classes on "Problems of Shipbuilding Supervision," under the Stanford University Engineering, Science, and Management War Training Program.

Instructor
Lt. Comdr. Stewart F. Bryant
U. S. Navy, Ret.

N THE WAGING of this war, ships, in a definite sense, are the largest projectiles that we produce, and have, moreover, the greatest range of fire. They are the most economical means of transportation of equipment and power, and serve more than any other factor to keep the war out of our homeland.

In the production of these great projectiles, the training and the efficiency of supervisors in the shippard industry is of special importance and of special difficulty. The load which is put upon them is more than is generally realized.

Let us work around the sectors of their responsibilities. Above, they must understand the essentials of management and the policies of management in order to help interpret loyal understanding and appreciation on the part of the working forces.

On the right, they must have a growing knowledge of their special craft and at the same time understand the needs of all related crafts in order to promote an efficient type of coordination within the shipyard. Below, they must not only know the elements of their own craft but must be able to be constant, efficient and patient instructors. They must know more and more about the handling of personnel, a problem of mounting demands with new types of workers from every state in the Union and from almost every other profession, must know how to absorb women into industry and must be able to help and understand the innumerable problems and changes set up by the dislocations of normal living.

To the left sector of this circle of work, the supervisor must know how to study, how to use books and journals, how to get rid of old-fashioned attitudes; he must know how to discuss shipyard problems in conference work with confidence and a good spirit of give and take. He must learn how to write if he is to become a future well-trained foreman who can increase his service by the use of the printed word. He must constantly be able to broaden his outlook and expand his knowledge of the shipbuilding industry, and, if he is to protect his future, it will be greatly to his interest to acquire a sound knowledge of the general principles of supervision and foremanship. That will give him a power of adaptation to protect his longrange employment and security.

If we put all these tasks together, it is evident that the supervisor and the foreman in shipbuilding have a great and valuable part to play in our national effort.

From all this it is not hard to see that in any program of training there is pressing need for speed, for concentration, for specialization, and at the same time for a general knowledge of coordination. The question then becomes: "Is it possible to develop an overall course to meet all of these demands at once and to develop morale in addition?"

This is how an experimental attempt was set up and indeed arranged by the efforts and suggestions of the class members themselves.

The course included twelve meetings in weekly sessions of two and a quarter hours. The session was divided into five parts.

- (1) World Events—about ten
- (2) Ship Construction forty minutes.

Intermission—fifteen minutes.

- (3) General Discussion—thirty minutes.
- (4) Personnel Problems—thirty minutes.
- (5) Progress Notes in the Shipbuilding Industry—ten minutes.

World Events

The world events period has as an objective the development of a

sense of purpose in the war and a sense of the vital importance of the shipbuilders' work and its importance to the war as a whole It is also a means of developing morale. It parallels on a smaller Army in its orientation course for officers and men in World War II. Battlefront events for ship builders are used to show the ef fects upon design, upon the neces sity for alterations, for damage control, and as a demonstration that high-grade workmanship is of very particular importance in certain parts of a ship that is be ing built.

Ship Construction

In the period devoted to the art of ship construction, the following general topics were arranged:

- (1) General Requirements of Shins
- (2) Types and Functions of Ships
- (3) Feature and Design of Ships
- (4) Stress and Structures
- (5) Shipyards -Plant Security
 The Building Industry
- (6) The Mold Loft—Blue
- prints-Nomenclature
- (7) Hull Construction—Sequence
 - (8) Welding-Riveting
- (9) Arming Ships—Repairs-Damage Control
- (10) Engineering Division -- Speed and Power
- (11) Launching—Outfitting—Completion

(12) Ships on the Battlefronts At each session, two or three of the most valuable and outstanding textbooks on the subject of the day were passed around the class, available for examination during the entire period; and at the same time one or two shipbuilding journals containing the best articles on the subject under discussion were also passed around. A standard text was recommended for purchase that was best designed to cover the entire course. A mimeographed list was also furnished to each member of the class, entitled, "A Shipbuilders' Model Library." This list contained outstanding texts of the country on shipbuilding and was designed to include cach main division of the shippard work. A few texts of value on human engineering were also noted. Steps were also taken to enountage the use of fibraties in each shippard and to encourage visits to local hookstores.

As far as can be arranged, sound films from the U. S. Office of Education or some other source were used when available for at least one session of the class. A is ual and sound methods of training have far more power than any lecture and blackboard method.

Developing Discussion

The discussion period is designed to give the flexibility that training in shipbuilding should now have. It offers a chance of bringing into a group the outstanding problems of the week. To break up a little natural resistance, a program was set up as follows:

The first evening a form was provided for each man to fill out in writing "What do you want in this course? What is your greatest obstacle? What particular problem would you like to have discussed? What textbook do you recommend in your division?" This same evening a voluntary panel of three or four speakers was organized for the next meeting, each speaker to present his ideas in about three minutes. This set a good example for the next week. On the third evening the question of the day was passed around to every man in the group. That broke the ice for all members. One week the question of interest was, "What is the greatest achievement today in your group or in your yard?" The next week discussion centered on the question, "What is the greatest obstacle that you find in your work?" With leaders from several yards, these questions were of great interest in breaking down the barriers against the exchange of information from yard to vard.

We asked an outside speaker to help for an hour. In the first twenty minutes he gave to the group what he thought they wanted to know, then the menhad a chance to ask questions, and for the third twenty minutes the instructor asked questions concerning what they both had left out.

One able director of training described the value of such discussion as "pulling ideas out of one for the benefit of all." Such discussion is of help in the development of instructor training, and is coordinate with the excellent work done by the Training Within Industry Group. For subjects there are such items as food, housing, transportation, yard coordination, and an appreciation of the difficulties and headaches of management.

Personnel Problems

In the periods devoted to personnel problems, subjects were approximately as follows:

- (1) Conference and Discussion Methods
- (2) Responsibility and Author ity—Records
 - (3) Leadership Orders
 - (4) Principles of Instruction
 - (5) Principles of Organization
- (6) Principles of Planning Waste Prevention
 - (7) Industrial Psychology
 - (8) Handling Grievances
 - (9) Women in Industry.
 - (10) Safety—Care of Materials (11) Foremanship Manage-
- (11) Foremanship Manage ment
 - (12) Self-Development.

These subjects were given in general as lectures, with discussion encouraged at any time.

The problems of "Human Engineering" in shipyards are now, in the opinion of many critics, at least as important as construction.

Progress and Achievement

The fifth period, of some ten minutes, was devoted to a sum mation of progress and achievement in the shipbuilding industry from many parts of the United States and even of the entire world. It is necessary, for this, to have available the outstanding shipbuilding journals of the world as far as they are obtainable. Such notes tend to broaden the knowledge and the interest of the men

and the capacity for cooperation of shipbuilding supervisors and foremen. They also help to tie up a better knowledge of the relationship of design, construction and operation.

Lastly comes the encouragement in the development of writing and being able to put one's ideas into print for the benefit, possibly, of the entire shipbuilding profession. This is important, and is a means whereby talent can be developed. Texts and pamphlets on shipbuilding are a very important item of training, and those foremen who are able to help in this manner are of great value to the entire industry. For these reasons, each member of each class was asked to submit in writing (that could be quite informal and not necessarily long) the development of some idea that required thought and imagination. Many of these articles were then published in local shipbuilding newspapers and journals. To stimulate this kind of work, arrangements were also made with the editor of this magazine for the members of these classes to prepare the larger part of this

One other item in training to remember is that it never does any harm to keep alive a little sense of humor. A course with high speed and concentration often needs a little lighter vein. Shipyard leadership is put to severe tests. A great load is in fact being put upon supervision.

As of passing interest, one of the most enthusiastic discussions came from the expressions of a few members who noted that they too often got "burned up" over this and that. The discussion then centered upon how we can develop an "asbestos mind"—one that can face obstacles and discouragement merely as valuable experiences to deliberately build up virile shipbuilding character and morale.

Supervisors and foremen in shipbuilding are developing a special profession. It is a task that could be more warmly appreciated by the general public.

Papers on Shipyard Problems

by

Supervisors

The Training Section in this issue is greatly enlarged, and is composed of themes written by members of classes on "Problems of Shipbuilding Supervision." These papers for the most part are the unedited manuscripts as they were presented in the classroom.

Representing the minds of practical foremen in an approach to the solution of various problems with which they have been faced in their daily work, these papers should be of great interest to the industry.

Pacific Marine Review will be glad to print any constructive discussion of these papers or any helpful suggestions that may be brewing in the minds of shipyard workers to the appropriate limits of ink and paper provided by our present Federal rations.

WASTE PREVENTION

By M. Dmitrieff

Western Pipe and Steel Co.

There are two kinds of "waste" in shipbuilding industry: waste of time and waste of material.

In the course of my work, as a survey man, I have found that many shipfitters are not paying much attention to blue prints and as a result, additional time must be spent in bringing this particular part to specification.

For instance: in installing brakets between longitudinals, as a rule, they never snipe off the corners of a braket at lower point in order to provide drainage.

Going through with survey I had to put a driller and a helper for seven days to drill holes and kept a burner busy four days to burn holes after drilling. All this waste of time and men power could be avoided by snipping corners at the time of installation.

As a remedy, in my opinion, shipfitters must be instructed not only to put a certain part in the proper place but also to check for small details, that are called for in Blue Prints.

If shipyards had enough instructors who could have time to watch work, we would have no such occurance. Saving pennies at the beginning, loses dollars at the end.

Waste of time occurs also when men are pulled off a job before it is completed and put on another

Classroom session of Mount Vernon High School pupils at Cooper-Bessemer Corporation's plant.



one, in such a case they often for get about the job that has not been finished and as a result, another department may be set back, waiting for completion of said job.

Remedy in such a case is to let a man finish his rob and only then give him a new assignment

There are many instances similar to the mentioned above but to numerate them would take much time and space.

Wasting material is mainly due to lack of training in shipbuild ing industry. Men are coming in green so much so that we have an expression: "they are so green that the whites of their eyes are green". From the type of men mentioned above one cannot expect expert work requiring no checking.

The men have their own interpretation of blue prints and their judgement is not faultless. Fitting a part they often cut short and waste of material and time is in result.

Now a days with shortage of steel, in order to replace spoiled material we more often as not have to wait a few days. All these

contributes again to a fact that the very few restricters we have, are excellented to make an extent that it is beyond their capacity to give enough attention to individual persons and explain in details what men have to do and how.

Appointing a few more instructors would decrease the number of their charges and the work will be accomplished faster, time and material will be saved.

To the inroads of the draft and women moving in in place of men will further aggravate these conditions.

In conclusion, I may say again we have to have more of trained personal to take charge of smaller groups and to give them instruction right on a job—what to do and how to do it; this in addition to the training offered by the Federal Defense and company schools.

SHORT CUT TO WELDING INSTRUCTION

By Alec Drachenfels Marinship Corporation

When we started construction on the last way to go into opera-



Repairing ships is as important as building them. Here is the 32,600-ton battleship U.S.S. California, equipped with G-E turbine-electric drive, being towed to drydock at Pearl Harbor after being raised by use of coffer dams from shallow resting place. (Official U. S. Navy Photo)



People in all professions work in shipyards. On the hull of the 150th Liberty ship to be built at California Shipbuilding Corporation appeared the phrase "Aut vincere aut mori." Puzzled workers sought out the author, Sam Arrigo, former Latin professor, who explained that it meant "Either to conquer or to die."

tion at Marinship we were faced with the problem of welding a ship with no welders. The five ways already operating had taken up all the experienced men available and the influx of new experienced hands fell to a minimum, owing to labor shortages.

Marinship, therefore, had to go to the Middle West to do its labor recruiting. The result was that our welding force consisted of 1 foreman, 3 leadermen, 2 trainees and some 20 men, all out of state who had been put through a hurried 4 to 10 hours' welding practice and sent on the job. Additional men were sent as the ship progressed, but they were all in the same category. These men came from many walks of life, mostly from packing houses and railroads. Their one outstanding merit was their keeness.

The ships' bottoms were being laid and there was no time to lose. We realized that conventional methods of teaching were too slow to keep up with the construction progress so we set out to find some quicker way of instruction.

We had an idea that it was not position instruction that was the



Coast Guardsmen are shown in their classroom at the East Pittsburgh works of the Westinghouse Electric and Manufacturing Company, where they are clearning how to maintain and operate equipment for Coast Guard vessels. This is the first of four groups of 20 men who will take the six-week course.

crux of the whole thing, but something more fundamental than that. After some experimenting and a lot of thinking, we reached the conclusion that "puddle control" was what we were looking for.

It is from the puddle at the end of the head that the welder receives all the elementary high signs of his art. In the shape and flow of the puddle he has his indications of machine setting, amount of penetration, position of rod, necessary oscillation, length of arc, shape of weld and so on.

It, therefore, follows that the essential knowledge is "puddle control", rather than the position of welding. I do not mean that position welding is unimportant; it is, however, secondary to puddle control.

Since puddle control has necessarily to be taught in one of the conventional positions and since welders had to be provided in all positions, we hit on the idea of splitting our trainees into equal groups and teaching and teaching them to weld in one of the positions only, concentrating all the time on instructions based on efficient "puddle control". In this manner we expected to be able to cover our production requirements for all positions. The underlying principle behind our idea was that once a man masters "puddle control" regardless of position he will make a better all around welder and it would be a

small matter to introduce new methods and positions to him.

We put our scheme into operation and had very commendable results. Several interesting observations arose from the experiment. We found that "puddle control" is best taught in the vertical, overhead and horizontal positions, Flat welding with large electrodes does not seem to give the required knowledge, and whereas a trainee can easily switch from any of the former three positions into all four positions, several of the men who started in the flat plane had the greatest difficulty in mastering the other three positions. The reason probably lies in the fact that there is too much difference in the techniques of handling large electrodes without oscillation in flat position and that of handling smaller electrodes in the vertical, horizontal and overhead positions. We also found that men learned to run flat easiest and it follows, therefore, that a person who has mastered the more difficut positions can certainly fall into the flat without any trouble. It is, therefore, advisable not to limit a trainee's scope to flat work too long, but allow him to practice one of the other positions.

We noticed also that most beginners have the idea that once they master an automatic and rythmic oscillation their welding troubles are over. We have had the greatest difficulty in overcoming this conviction. When instruction is presented from the point of view of "puddle control" the whole approach is changed and stress is laid on the fact that the trainee must understand right from the start that he canot force the puddle to take shape according to his wishes unless he learns to recognize and obey the indications in that puddle. In other words, it is not he who tells the puddle how to behave, but the puddle is the one that tells him and he must learn to understand the puddle's language. If he doesn't, his progress will be retarded by having to fight against wrong machine setting, wrong positioning of rod, unnecessary and faulty oscillations and so on.

"Puddle Control" also teaches the trainee in the earliest stages that no two puddles are exactly alike and that, therefore, a slightly different approach is required in every puddle, in order to insure a uniformly shaped weld.

We also found that the setting of machines and general applications can and should be standardized for quick instruction. The only variation between individual style which can hardly be eliminated are the differences of approach discussed in the preced-

Twenty Coast Guardsmen are being trained to maintain and operate equipment for Coast Guard vessels at the Westinghouse Electric and Manufacturing Company's East Pittsburgh works. Sixty other blue-jackets will take the sixweek course in the future. Five of the traines, all electrician's mates, are shown above examining a generator stator with their teacher.



ing paragraph. The old conviction that welding methods must vary considerably with each in dividual has gone by the board. This conviction grew out of the fact that our admirable pioneers were unfortunate enough to have had to learn the trade by them selves by the hit and miss method, gradually and painfully develop ing a means to an end often through incorrect procedure. The fact that they could produce the necessary results does not justify their methods any more than a man is justified in claiming that the right way to walk is on his hands, just because after many painful years of practice he can walk on his hands. Let us walk the right way,

A POCKET OUTLINE OF THE WORK OF A SUPERVISOR

By James R. De Long Bethlehem Steel Co.

Shipbuilding now requires speed, breadth of knowledge, capacity for adaptation, concentration on essentials, resourceful leadership and an understanding of personnel in the training of supervisors. This outline of work that follows attempts to cover these requisites.

Leadership

An organization to be successful must have strong, resourceful leadership. The leader must be willing to assume full responsibility for his work and the men as:

- 1. Training
- 2. Safety
- 3. Working Conditions
- 4. Problems in supervising men and women
 - 5. Organizing.

The supervisor must look ahead forcing personally the necessity to:

- 1. Increase technical skill.
- 2. Learn to use books, texts and up to date terms.
- Learn to be a natural instructor.
- 4. Understand industrial psychology.
- 5. Know how to express and write ideas.
- 6. Learn to enjoy fighting the hardest problems and not be dis-

couraged by inefficiency and lack

Lo organize the Company's policies must be understood Well founded Company policies are essential to successful organizations. Company policies may be broadly defined as the body of principles or rules of conduct by which the aims of the enterprise are to be achieved.

Planning

The supervisor in planning the work should formulate a plan and work to the plan. The work should be outlined in a systematic way. As work planning has a definite reaction on the men mentally as well as physically, as:

- 1. Well organized.
- 2. Have all the facts.
- 3. Knowledge of the men and training of them.
 - 4. Analysis of the job.
- 5. Knowledge of the equipment.
 - 6. Be able to follow up.
- 7. Open minded for improvement.

Ability for Planning

Abilities for planning as required are:

- quired are:

 1. To see a situation as a whole.
- 2. Be able to break a problem down into its elements.
 - 3. Constructive imagination,
 - 4. Impersonal attitude.
- 5. Be able to measure a given procedure.
- 6. Not to become entangled in details that no time remains for planning. The supervisor should discipline himself in planning his time.

Grievances

Men spend years learning a trade. But spend little or no time learning about their fellow men or their habits. A good supervisor will study his men at all times to detect any grievances or symptoms. The supervisor that is alert can detect grievances by the symptoms before the men themselves know.

When a plant is running twentyfour hours a day, the supervisor finds numerous mistakes in workmanship. When the mistakes continue to occur the men will become dissatisfied and have a ten-



Seth Hershey, turnet lathe operator employed by the York Ice Machinery Corporation at York, Pa., is a production veteran of two wars. At seventy, he has postponed his retirement to say on the job building parts for the cargo ships of America's Victory Fleet, and Rear Admiral Emory S. Land, Chairman of the U. S. Maritime Commission, has commended him for the part he is playing in war production.

While the youngsters are busy preparing to carry on in war work, men like Mr. Hershey are endeavoring to reach a still higher speed in turning out vital war materials.

dency to slow down production assuming the attitude "I don't care". This form of grievances are very common and maybe overcome by instilling the attitude in the men, "no matter what the job is try to complete it and as accurate as possible." With least amount of comment on others mistakes.

Grievances Solution

- 1. Knowledge of the causes
- 2. Immediate explanation
- 3. Sympathy
- 4. Imagining
- 5. Worth of the individual
- 6. Training
- 7. Facing realities
 - . Solution of private problems
- Direct orders when needed
- 10. Replacement when absolutely necessary.
- 11. Change in surroundings.

Ferry-Boat College for shippard knowledge





Top: Workmen coming aboard pause to study sign on courses available in "Ferryboat College."

Center: Ed Jockers, instructor in Yard One school, also teaches an attentive group on the ferry.

Bottom: Vincent Sheehan convinces a woman shipfitter that a blueprint does make sense, while another student uses a nearby lady for a desk. The busy little bee that improves each shining hour has nothing on Richmond shipyard workers who ride ferries to San Francisco. During the one-hour voyage, classes in a variety of shipbuilding subjects fill all available space with attentive students. The instructors are shipyard leadermen and foremen.

The Permanente Metals Corp., Richmond Shipyard No. One, Personnel Training Department, started the idea, Yard Three came in a close second and Yard Two is now laying plans to follow suit. On the Yard One ferries, classes are given in welding, pipefitting, shipfitting, blueprint reading, marine electricity, and first aid. Classes for other crafts are being formed as rapidly as requested by workmen and instructors can be secured.

Motion and still pictures, blackboards, mimeographed lesson sheets, lectures and class discussions are used, giving instruction in theory, principles and methods to correlate with the actual work being done in the shipyard.

Dick Liebes, director of Personnel Training in Yard One, and his assistants, Art Jacobs and Frank Newhall, have labored long and faithfully to get the school under way. Cordial cooperation has been given by the Maritime Commission, Manager Fenema of the Wilmington Transportation Co., and Captain Tibbetts of the Bureau of Marine Inspection and Navigation.





Top: Neale Lewis diagrams the magnetic forces of attraction and repulsion in armature and field.

Center: Ed Jockers unravels a tangled problem in the ratios of diameters, perimeters and so forth.

Bottom: Shipfitters laying out ship lines on the ferry deck.





The supervisor can strengthen and develop his leadership by

- 1 Recognizing the individual differences
- 2 Recognizing their influence on the action of the men.
- 3 Observing the effectiveness from taking advantages of individual differences in getting work done.
- 4. Understanding group atti-

One individual differs from an other in personality, aptitudes and special abilities with which he is equipped and which he is able to contribute to the company.

The supervisor who knows his men recognizes their individuality and handles their grievances promptly and maintains their moral through sound plan leadership, by doing this he is taking the necessary steps to hold absenties and tardiness to a minimum.

A new employee lacks full confidence in the company. Thereby giving the supervisor a selling job too. The objective—trying to obtain a well balanced worker in his work unit. "Job instruction" is very important to a new employee.

PROBLEMS IN REPAIR WORK

By Dave W. Ellsworth
Maintenance Quarterman
Western Pipe and Steel Co.

The repair and up-keep of machinery in shipyards working on a twenty four hour basis is a major problem; a problem that taxes both the patience of management and the Maintenance Department alike.

Machinery, no matter how well put together, has the factor of friction to contend with and ultimate repairs become necessary. Then too, our present need for operators makes it necessary to hire help that still is very rough in handling equipment. By adding a third and a dangerous factor, that of overloading capacities, brings three prime reasons why repair is a definite problem. These three causes of breakdowns must be reckoned with. So working on the premise, that shut-downs are

mevitable, we gather together our Maintenation riew

Specially trained men are desperiately needed men who have ingenuity, initiative and who take pride in doing a job well. The nucleus of the Department is great, but the help lured at random in many instances lacks the prerequisites of good mechanics. This lack of skill in some cases is balanced by a determined will to learn.

To delve into the many irksome tenance Department would take a great deal of copy. There is a lack of parts obtainable for replacements, necessitating building from what material that is at hand many of the parts. This method isn't always satisfactory as a substitute material may be far inferior to the original part. \ repair crew is working against time every minute a machine is standing idle and production takes a punch in the solar plexus. Now as never before we must keep the wheels of production

Working conditions are as a rule poor for facilitating repair work. Weather or place is no respector of break-downs. Consequently, crews are toiling in the open even in the worst of weather. Men don't do their best work when they are wet and cold.

Few of the yards, due to the over-night expansion, are properly equipped to adequately handle many of the major breakdowns. Time again is lost in sending parts out for outside shops to make the repairs. The best Maintenance Department does a good job in the least possible time. Time is vital.

The LAMENTS of a MACHINIST; or, A LITTLE COOPERATION, PLEASE

By Henry F. J. Puttaert Bethlehem Steel Co.

1. The shipfitter should know what type of equipment will have to be fitted on the foundation they install. In doing so, they should be careful in their measurements and work, from the same basic

lines used by the machinists. Ship center line, definite frame lines and base lines alone should be used and not, as is often the case, work from "longs" which are not always right or from frames which have not been set by the engineers. They should also strive to keep the foundations level and to proper declivity so as to require the least amount of surfacing. Dimensions should be care fully checked so that flanges, webbs, brackets, gussets or stiffeners are in the right location, allowing chearance for both heads or nuts after holes have been drilled.

2. The pipe fitters and coppersmiths should be careful in their measurements of pipes so that when they are secured to pumps they will fit without putting a strain on the pump flanges and cause the shafts to bind. Pump inlets and outlets, valves, fittings and pipes should never be left open, but covered with blanks of wood or metal, so as to avoid dirt, loose bolts, nuts, welding rods or other foreign substance to fall in them and eventually reach the equipment and cause serious damage.

3. Welders should be careful in welding foundations, to insure welding in proper sequence with the right heat and size weld, in order to produce the least amount of distortion. In welding near machinery they should see that it is protected from sparks, especially if machinery in the course of installation is open.

4. Burners should be especially careful in burning through decks, and bulkheads and first find out what is going on on the other side. Serious damage might result from molten metal flying in an open bearing.

5. Asbestos men and boiler insulation men should be made to realize that they are not the only ones on board ship, and made to protect the equipment over which they work. Asbestos, spun glass and fine brick dust are not the best lubricants for machinery, but rather, injurious to pumps, valves, bearings, electric motors, etc.



A scene in the Marinship inyard training school, showing a group of burner trainees, who actually handle production work as they learn.

6. All crafts should protect the equipment installed on board, which, after all, is what makes it tick and they should be made to realize that, although perhaps in a small way, it is they themselves who are, nevertheless, paying for this equipment.

ADVANCE DEVELOPMENTS IN SHIPFITTING

By James Van Marr

Shipfitting is one of the most important crafts in ship building, and because a shipfitter's circumstances are so diversified, he can easily be termed a "jack-of-all-trades". He is called upon for advice about everything that has to do with the construction of a ship.

The particular requirements of a shipfitter during the construction of a ship, from keel to wheelhouse, are to thoroughly know blueprint reading, have a good knowledge of mathematics, mechanics, carpentry, joiner work, rigging, welding, chipping, burning and mold loft work. Layout work is one of the above mentioned which he needs to know second to none.

In advanced shipfitting a leaderman on the ship should plan his work as far in advance as possible. For example, if the shelter deck is nearing completion all the material that is to be installed on the shelter deck should be ordered in time to have it available at the proper time, considering also allowances for any delays. Sequence of construction is of great importance, and should be studied every day from the sequence chart.

Shipfitting is not without its moments of quick thinking and sound judgment, because there are no limits as to what you may be called upon to do or decide.

Problems confronting a shipfitter are the following:—dissatistied workmen, lack of materials, minor details hindering important ones, mold lines out, wrong brackets, buckled bulkheads, template wrong, no added material, material too short, no burners available, unable to get a welder or chipper, men making mountains out of mole hills, blueprints not showing proper detail, someone changed this or that, "that is not the way we did it in 1915". These and many others must be reckoned with, and given sound judgment and quick decisions.

Handling men is as important as many other things. This may be a gift for some and an accomplishment for others. Perhaps some do not have it, and some never accomplish it, but one proof, or at least a good analysis of this is do your men work with you one hundred percent or one percent against you.

A shipfitter leadman must also be alert as to the safety of his men. He should be able to recognize types of ability in each man, and realize that some men may be better at one particular kind of work than the other, and it is the leadman's responsibility to get the best he can out of a man in the least possible time.

Time is the essence of our war problem, and any man who through his ingenuity and knowledge of shipbuilding can devise, promote or speed up the construction of any ship or part thereof, can regard himself as a soldier on one of our most essential fronts—SHIPBUILDING.

HEALTH PROBLEMS By Carl Hilpsich

Something should be done about health conditions in the ship yards. In ordinary times, conditions as they are now would not be allowed to exist.

Welder's smoke is the direct cause for the loss of more than 2500 man hours of work per ship. Welder's smoke, especially from galvanized metal, enters the blood stream and is the cause of a sickness that may affect a person in at least three different ways, or any combination of these, namely: in the throat, muscles or bowels. The throat takes on the symptoms of a bad cold, but ordinary cold remedies do not clear them up. Muscles, when attacked, become sore throughout the body, and the individual becomes weak. Diarrhea is the result when the bowels are affected.

Bad light doesn't help the worker do a better job; and here has been the cause of at least one death.

Poor eating facilities, where



A group of six shipyard workers, all checkers and time-keepers in the Ingalls Shipbuilding Corporation shipyard at Pascagoule, Miss. Left to right, they are: Louise James, Frances Douglas, Beatrice Maxcy, Doris Moncrief, Odette Fletcher, and Posey Shealey. Hundreds of other women fill such jobs as welders, pipe fitters, etc., replacing encugh men to make up several companies of soldiers on the war fronts.

sandwiches, coffee, milk, candy, no cream and pre comparse the bill of fare day in and day out are disheartening. The half-hour allowed for lunch seems short except for the fifteen minutes spent standing in line waiting to be served. If a man eat outside the yard, the story is about the same except that he is exhausted when he returns to the ship because of the distance.

None of the above conditions are beyond repair. Why isn't more being done about them?

ABSENTEEISM, AGENT OF THE AXIS

By Martin Encinger Marinship Corporation

One of the most discussed problems in the shipyards is absenteeism and yet the dyed in the wool worker never gets a nod from the management for his faithful attendance, day in and day out, through bad weather and sickness. There are many workers who would appreciate a pat on the back for their loyalty and perseverance, but none is forthcoming. Instead, they continually hear about the 5% who are absent.

Why not attach a note to the card of the loval worker each month, acknowledging the fact that he hasn't missed a day and every three months give him a button, a silver pin for six months' perfect attendance and a gold pin for a year's. Down deep in his heart he is proud of his loyalty and would like to know that the management appreciate it. So let's forget about the 5% who don't and recognize the 95% who do come, despite inclement weather. sickness and adverse transportation facilities. Let's be a BIG AMERICA.

SAFETY OF STAGING By Frank M. Findley

WATCH YOUR STEP!

Those words should ring constantly into the ears of every person employed in the shipyards, and particularly the people who are new to this work. If such

were the case a great many unnecessary and it is would be prevented by a more says that people use extreme caution in moving about and working on a ship byeryone should not only be careful in order to prevent any injury to himself, but should also be careful not to create any condition which might tend to cause injury to others.

In recent weeks large numbers of women have been employed by all the yards. According to various forecasts, this is but a fore runner of what may be expected in the next year or so. Women in general have had very little experience in climbing about ladders, such as necessary when working on a ship. Welders and burners in particular must carry a large amount of bulky equipment. Most all people in these two trades attend schools run by the companies, as preliminary training. This offers a fine opportunity to instruct women in particular as to how to climb ladders with their tools and to move about a boat in general. It may be necessary to place ladders in the schools so as to familiarize these new employees with the correct procedures in climbing, and also to have some staging built for further instruction, as to how to work with safety.

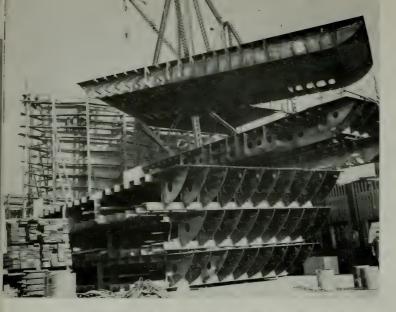
The scaffolding built on the outside and inside of ships is commonly known as staging. On the outside there are numerous methods in which this staging is built. Some use all steel construction, with wooden planks, while others use the traditional all wood construction. The outside staging is built with regular intervals of space, so that men may work comfortably; however, in most con-This is to enable people to work this is generally accomplished by using spawls from the level desired, while in all wooden construction a series of tables is used. In both instances wooden planks

are set in at these levels. Also on the outside there usually are several master ladders which enables a person to climb from the ground level to the top of the boat. There may be numerous other ladders set in at various heights for the convenience of the workers,

Inside staging is built for work ers on the inside of the hull. In this type there is also quite a vari ation in the construction that is used. Some prefer to use what is known as hanging staging in vari ous locations, while others refuse to use this type and demand that it built from a solid deck up. On an average most of the inside staging is placed about three feet above the deck. In this way it permits a worker to use his tools overhead. Ladders are set up throughout the boat so as to enable the people to pass with ease to all parts of the boat. Guard rails are placed wherever it is necessary to give protection to those on the boat.

The stage-rigger is on the boat to make conditions safe for others, and should be called upon to do all work in connection with the setting up of staging and moving of same. The worst thing a person can do is to attempt to put up staging himself or to move that staging which is already up. A person working on the outside may attempt to use some object. such as a bucket to stand on. Should this slip, it is possible that the person would go under the guard rail and possibly fall as high as sixty feet. When a person moves a plank himself, it may weaken the support of some other part, and cause injury to someone at a later time. The best rule for a person to follow is that they call a stage-rigger whenever they need any staging.

When traveling about a boat, a person should follow the routes, as they might be called which have been set up by the stagerigger. All ladders have been placed so that they are the safest to get to various points on the ship. Some people insist upon taking short cuts, but this is apt to prove very costly. As an instance,



Half a million pounds of gigantic "building blocks" prefabricated in the Kearny yard of Federal Shipbuilding and Dry Dock Company are shown ready to go over the top into a new ship's hull. These "tank top sections," each weighing 42 tons, are welded together in the Assembly Shop, then hauled to a shipway ready for welding into place to enclose a shallow "basement" tankage space.

a person may step on a guard rail, which is not put up for that purpose, and this may give way and cause a person to fall a considerable distance. There are also other people who try to substitute speed for safety, and endanger their lives in so doing. One may try this speed on a master ladder, but if he misses, it is probable that a very serious injury will result, due to the length of the ladder. In climbing ladders, people should look to see what is above them, as it is possible a new chipper may be on the job, and not use proper caution, which might result in some object falling on a person. A welder or burner may also be working along the path of a ladder, and this might result in a person getting a flash.

When walking along any staging, particularly that on the outside, one should look to see that he does not trip on hoses or other things, such as clips, chippings, and other pieces of metal, which may have been left on the staging. These absolutely should not be there, but careles ness on the part of others will not protect one at that particular moment. Every worker should see that he does not contribute to such conditions, as it endangers the safety of all. Hoses should always be put under all staging, and when one finishes work, he should pick up metal and tools, which he has used. In most yards, various crews are supposed to keep all the staging clear, and to keep the whole boat in a clean and orderly condition.

The matter of putting up ladders is a very serious one, as they must be secured through the use of clips or ropes. Some people persist in putting up ladders themselves, and then leaving them in a loose condition. It is possible a stage-rigger may not see this for several hours, thus causing an injury to some other person. Under no conditions should a person, other than a stage-rigger, put up a ladder. The same may be said for the moving of any staging. If a person sees any condition which might cause injury to others, he should immediately report it to a stage-rigger and in so doing may prevent an No attempt has been made to go into detail construction of various types of staging, both on the inside and outside, but an attempt has been made to roughly outline some of the types of staging used, and to discuss some of the conditions which are prevalent in all yards, and to offer a few suggestions as to how accidents may be prevented. Everyone should think, not only of himself, but also think if he is causing any condition which may lead to the injury of his fellow workers.

ROOM FOR IMPROVEMENT By Jack Gibbons

Being a shipfitter instructor in the Outfitting Department, my problems are many. Some small, some large; some I can handle others—that's what I am about to write about.

As we work only on boats which are in the water (after launching), our crew are responsible for all the small stowages installed aboard ship. Starting with wrench stowages, door hooks and bumpers, hose stowages, lifting pads, inclined ladders, portable fire extinguishers, to foundations for safes, hot water tanks, ships fenders, drinking fountains, refrigerator foundations, submersible pumps, hose reels, hawser reels, shore line connection reels, position buoy tow line reel, reels for small stuff to foundations for fresh water drain tanks, salt water booster pumps, ice machinery foundations, condenser foundations, air flasks, air separators, hydrogen bottles, Freon bottles, CO2 system tanks, to air ports escape scuttles and grab rods over manholes.

Parts of these different foundations and stowages are purchased outside the yard, but most are made up in the yard by the different shops. If the system we now have in the yard was understood by all it would be perfect, but that is not the case. For instance, there are the inclined ladders—13 in all. The stringers, treads, chair and stools, are made up by the shipfitters on the slabs; toggle

pans, brass collais, state been sockets are mode as he the machine shop. Stancheous and sable eyes, hand rails are mode as by the blacksmith shops cable is and tail chains are from the riggers' loft.

The routing of all these successare on the B/Ms. A hold up from the east comes through on the inclined ladder plan, pending a letter from the Navy Department. All inclined ladder plans are marked: Hold up. The letter from the Navy Department comes through, stating that only Block 6, pertaining to ladders from Nav. Bridge to MDC to 1st Plat to 2nd Plat at Fr 72 are to be held up. pending an alteration to follow. The other ladders on this plan are OK to go ahead.

Slab 8 makes up the parts they are to make up, and manifests to the warehouse. When we get the order of schedule to install ladders aboard ship, we check with Slab 8. They say "all made up and in warehouse". We go to the warehouse to manifest ladders aboard and find parts missing, only ports stringers, treads, chairs and stools are in warehouse. We then check with the Production Department and they say "All work on ladder plan held up awaiting alteration". The drawing room is supposed to send each department which has routed them parts of these ladders a plan so that they can go ahead on parts not held up. As Slab 8 did receive a corrected plan, the others apparently did not. None of these departments took the time to check on work routed to them. all were waiting on a 'go ahead' from the drawing room. We get the job with parts missing. Now we have a deadline, all welding close to gun mounts to be finished by a certain time so the marine machinists can start milling the gun mounts. As welding on or near gun mounts will distort foundations, some of our ladders are to be welded to gun mounts. The machinists are held up; we are held up and a week is lost before parts needed are completed. The same problem exists

an all the control of the gradual difference of the plan. If we have possible to the production of the production of the control of the system is perfect to practice, with inexperienced mentrying to make it work—well sir, who may we it

POINTS ABOUT BRASS AND COPPER PIPE That Every Worker in a Shipyard Should Know

By S. L. Taylor Pipefitter Leadman Western Pipe and Steel Co.

The very amount and number of the copper and brass lines in and about the engine room of a ship relatively unimportant. A workman, who would ordinarily be very careful not to damage a gage or indicator, will often unthinkingly walk or climb on the brass or copper lines connecting such instruments without realizing that these lines are in some cases almost as delicate and liable to damage as the instruments that they connect. These lines are the nerve system of the mechanism of the ship; through them flow the impulses that both tell the engineers and officers what is happening in the various parts and systems of the ship, and also govern and control those actions. While it is true that in the final inspection of the various systems, flattened or kinked portions of the copper tubing is usually discovered and corrected there is still the possibility that some such damage might go undetected until such a time when it would cause a failure in the proper operation of the machinery; and in wartime even a relatively minor mishap result in serious damage or even the loss of the ship itself.

Much more common however is the case where the damage is discovered. Then the damaged portion is removed, resulting in a waste of copper which is one of the country of the time of the time involved in this circ. In the time is in the time involved in this circ. In the country it is made the second be shown to be a simple strongly of the fine times and indifference required between two and 150 feet. In open tubing of more than 10 days work for a mechanic and a helper. While this is admittedly an extreme case that does not eliminate the fact that most damage and loss of time from this cause would be eliminated if all the workmen on the hull knew and realized the importance and weakness of this type of material.

YARD COORDINATION By Earl Morgan

Improvement of inter departmental cooperation and work planning, has a place in common in our ship building industry.

If our Engineering Department, Purchasing Department, and Department Heads could get together, and plan as near as possible the delivery of equipment and materials as needed, to coincide with construction of our Hulls, we could expedite the outfitting to a great extent.

Now, for instance, if the Purchasing Department knew just what Pump, tank, etc., was needed first, after the laying of the keel, and had that material at hand when needed, and the balance came in sequence with the progress of the ship, the outfitting and delivery time could be cut to a minimum.

Quite often the lack of proper planning, and the fact that Purchasing Department does not know the sequence of systems and equipment going into the ship, causes delays, due to the fact that what is needed first is not on hand, and probably something that is needed for the trial trip, is at hand and taking up valuable warehousing space.

Let's get Engineering and Purchasing and the layout man all together on this.

The course of the remaining of the man

Maintenance of Marine Diesels

I—Salt Water in Lube Oil

by Carl Johnson

diesel engineer, I have been asked several times what kind of trouble in general I have had with marine diesel engines.

I will herewith give you a few of the experiences I have had with the marine diesel engine in the past thirty years. The diesel engine gives us less and less trouble, but, like everything else, there is still a lot of improvement that can be made to this very efficient prime mover, and I think that a diesel engine today operated by an experienced engineer is as good as any type of marine engine

One of the most common troubles experienced with the diesel engine is salt water in the lubricating oil, and you probably know what that does to your engine. Thousands of bearings have been rebabbited on this account, and you will find lots of ships today that have plenty of salt water muck in the oil tanks and crank cases.

Also it is a fact that many operating marine engineers think nothing of this—not knowing the seriousness of it or the harm it does to the engines.

How does the salt water get into the oil?

This can happen in many ways on the different types of engines. All larger types of engines have the oil in a bottom tank with a cofferdam for protection from the sides. However, no protection is offered from the ocean on the bottom, and many times a leaking seam or rivet will allow the water to seep in. It is very difficult to stop this seepage without drydocking the ship.

Salt water can also get in from the top of the tank. This happens when the manhole plate is leaking and the ship lies in port and the bilges cannot be pumped out and the water rises over the tank top. I am always in favor of sounding the oil tanks every four hours even when the ship lies in port.

On some ships the oil coolers can give a lot of trouble, and should be cleaned and tested about once every six months. You will quite often find a leaking tube. A tubeless cooler is not fool-proof either. They are usually placed in the bottom of the crankcase in auxiliary engines. One of them had us pretty well puzzled some years ago. Discovering we had salt water in the lube oil in one of the auxiliary engines, we stopped it immediately, pumped all the muck out of the crankcase with a hand pump and cleaned it. We thought at first that the water came from a leaking rubber ring around the bottom fit on one of the liners, but after putting the water test on the engine, there were no water leaks to be found. So we decided the water must be coming through one of the doors on the engines side.

This decision came from an experience we had before with a little water leak on top of the engine. The water was running down the side of it. We at that time thought that when the packing on the doors was tight enough to keep the oil splash from coming out, the water from the outside should not get in. That thought required us to rebabbit the main bearings on that engine and we were more careful with the water leak from then on.

But in this case it was not the trouble. After checking everything and not finding any leaks, we decided to put new oil in the crankcase and start up the engine again, telling the oiler to sound the oil every hour on that engine and let us know of any changes. After about twelve hours' running the oil raised about 1/2". The engine was stopped again, the crankcase cleaned once more, and tested. Everything as before, but no leaks. We were now willing to listen to a suggestion from anyone, and we got one from the youngest man in the erigine room -a boy about eighteen years of age. He asked if there was a possibility that the oil cooler, at the bottom of the engine, when the oil got warm, opened up some pores or cracks and let the water in. We had a spare cooler in the storeroom and decided to try that, and our troubles were over.

Lots of engines have watercooled pistons, and quite a few
are still using salt water applied
through telescope pipes. These
telescope pipes can give a lot of
trouble if not well lined up and
the packing in good order. One
other experience we had a number
of times with crosshead types of
engines has been where the water
goes in to the gage block. After
some years of service this wears
a hole right through the block,
and you will find lots of engines
plugged in this place.

There are a lot of other ways to get water in the oil, but those here mentioned are the most common, and it would take too much space to explain them all.

Nowadays the motorship owners are going in more and more for fresh water cooling. This eliminates a lot of trouble and saves the owner a lot of money in repairs and material. We think this saving more than justifies the extra cost of installing it in the ship.

The author is Supervising Diesel Engineer, Ge eral Engineering & Dry Dock Co.

Pacific Shipping News

by Special Correspondents

Explanatory

In the interests of conservation of paper as directed by W.P.B., we are merging our Northwest and Southwest News Sections and combining with them some comment on the Central and Coastwide news affecting the marine industries. We hope that this will meet with approval, and that our readers will feel free to offer suggestions or indulge in criticism.

In a monthly periodical, it is practically impossible to publish material that has news value in the sense of being new to the reader. We therefore try to confine our comment to the trend rather than the event. Our two representatives, R. H. Calkins in the Puget Sound-Columbia River area, and K. M. Walker in Southern California, will still be supplying us with this materialwhich we will boil down and pass on to the reader with some comment. [Editor]

New Manufacturing Executive for West

Recognition of the growing business and industrial importance of the Pacific Coast, and confidence in the future of that area, were believed mirrored in an executive appointment made by the Westinghouse Electric & Manufacturing Co.

Charles A. Butcher of Pittsburgh, Pa., formerly assistant to the national manager of the company's District Manufacturing and Repair Department, was named manager of that department for the entire Pacific Coast District. Announcement of the appointment was received from Harry F. Boe of Pittsburgh, vice president in charge of the department for the entire nation. Mr. Butcher succeeds R. E. Powers, resigned.



CHARLES A. BUTCHER

Named manager of Westinghouse's Manufacturing and Repair Department for the Pacific Coast District.

The new Pacific Coast District manufacturing and repair manager will have charge of activities of his department in a territory comprising all or parts of 11 Western states, Alaska and the Hawaiian Islands. Included are the District headquarters plant at Emeryville, Calif., where he will make his own headquarters, and manufacturing and repair plants at Los Angeles, Seattle, Portland and Salt Lake City.

New Bill

A California Assembly bill calling for the appointment of ten additional San Francisco bar pilots is before that body. Its author is Assemblyman Thomas A. Maloney of San Francisco. The measure is said to have been introduced at the request of the U. S. Coast Guard. The bill calls for the appointments to be made by the Governor as shipping demands. Present pilots number 19.

Awarded Service Emblems

Four men who are familiar figures in Bay area marine activities were recently honored with the award of service emblems by Tide Water Associated Oil Company.

H. B. "Bert" Haney, manager of the Transportation Department, passed his quarter-century milestone with Associated, and in recognition of the event he was given a gold emblem, set with a diamond.

Oldest of the group in point of service was G. D. Zeh, manager of the Marine Department, who celebrated his 40th anniversary with the company. To honor this outstanding service record, Mr. Zeh was presented with a gold pin decorated with four diamonds.

Proud possessors of service emblems also are J. G. Wefring, master, and D. W. Billings, chief engineer, of the S. S. Midway. Mr. Billings' pin displays three diamonds, symbolic of 35 years' connection, and Capt. Wefring wears one diamond for 25 years.



Victory Gardens

At Webster-Brinkley Company, Seattle, Washington, a garden booth is set up as an information center during lunch periods and shift changes. The girl in charge of this booth serves as a clearing house for all manner of garden queries.

A series of interesting events has been planned, such as a Midsummer Garden contest, Home Canning Contest, and a Harvest Festival. Substantial prizes are being offered in each division.

Seaman's Hotel

Merchant seamen returning to overcrowded San Francisco from overseas voyages will find hereafter that the 150-room Lincoln Hotel at 115 Market Street has been set aside for their exclusive use.

The United Seamen's Service has negotiated a lease of this hostelry for the duration. Housing conditions have been so bad that many seamen have lost their money, papers and other valuables through being compelled to sleep in public places. A seaman must show his papers to register at the Lincoln, which opened on May 1. Rates are \$1.00 a day up.

Commercial Fishing

The O.P.A. has announced that fishing vessels operating in North Pacific, Alaskan or Central Pacific waters on long off-shore trips will be allotted rationed foods for the entire crew and trip, with allowances for any emergencies.

The Alaska salmon fisheries are recruiting Oriental labor for this fishing season. Approximately 2650 men are needed in the Alaska canneries, and these will be Filipino, Chinese and Mexican. They will have to come mostly from California, and will be hard to get, as they will all have good jobs in which their present employers will use every effort to retain them.

Army and Navy are returning 80 tenders and power scows.

In the meantime there is a dispute on between the salmon industry and some 17 labor unions representing some 25,000 employees who normally fish and work in fish canneries during the Alaska salmon season. The War Labor Board on April 6 had appointed a five-man panel to hold closed hearings on this dispute, which is over wartime bonus, war risk insurance, and an "escalator clause in the present contract." Personnel of this panel is: Theodore Ryan, public member and chairman; Dewey Bennet and Peter E. Terzick, representing union labor; Wallace Campbell and Harry Shook, representing industry. None of these men is in any way connected with the fishing industry.

In the whale fishery there will be no activity by American fishermen, since the six vessels of Amercan Pacific Whaling Co. were taken over by the U. S. Government. However, the whaling fleet of Victoria, B. C., will continue whaling operations this summer.

Tuna fishing is undergoing a drastic change. Practically overnight all the so-called tuna clippers were requisitioned by the Navy, and disappeared from Southern California harbors. To take their place, the industry has bought and converted many fishboats of the purse-seine type, and is using them to advantage in the tuna business.

Fishery Coordinator Harold L. Ickes has appointed a consultant

board of nine men to work with the Government in easing the difficulties of the Pacific Coast sardine fisheries before the opening of the new season in August. The 1942-43 total sardine pack dropped below the level of 1941-42, although Southern California's share increased by 40 per cent.

Surfboats Shipped

The Washington Boat Works' Lake Union plant on April 13 shipped 16 Monomoy surfboats by rail to the Maritime Commission officers' training station at Alameda, Calif. Shipment was made on eight railway cars, and completed an order for 34 of these boats placed by the Commission. Eighteen of the boats were shipped to the officers' training station at Catalina, Calif. The firm recently delivered nine 50-foot Coast Guard patrol boats.

Eliminating Delays

At all Pacific Coast ports organizations are being formed of the various factors involved with the purpose of eliminating bottlenecks and delays in shipments on the waterfronts. These organizations hold frequent meetings and exchange ideas, iron out difficulties, and agree on certain practices calculated to prevent last-minute delays.

One rather interesting corollary of this movement is the decision by the International Longshoremen's and Warehousemen's Union to inform President Roosevelt by wire of every delay for more than 30 minutes of any shipment at any Pacific Coast port.

Port Victory

The San Francisco State Board of Harbor Commissioners and the Port of Oakland chalked up another step toward victory when the U. S. Supreme Court granted their petition for a review of a decision dismissing their suit to restrain the order of the Maritime Commission on rates in the San Francisco Bay Area.

War-Risk Rates

The Institute of London Underwriters cut war-risk rates during March. The reductions were most marked in the American section Cargoes via the Panama Canal and Pacific Ocean to India, Ceylon and the Persian Culf were chopped from 20 to 15 per cent of the value of the shipment

This general downward trend based on underwriting figures is a good indication—a favorable comment on the anti-submarine war

Post-War Plans Taking Form

A tentative program for the post war development of San Diego Harbor has been adopted as follows:

(1) Construction of a 1200°x000° commercial pier at the foot of Tenth Avenue with fully adequate warehouse space to handle thousands of tons of commerce, principally commodities from inland points for overseas export.

(2) Earmarking of specific tide lands by exercising cancellation clauses in existing and in future leases on property adjacent to the Tenth Avenue Pier for construction of warehouses.

(3) The permitting of all or any part of the tideland and pier facilities to be segregated and utilized as a foreign trade zone.

(4) Setting aside by the Harbor Commission of \$150,000.00 annually in a post-war fund specifically earmarked for improvements.

Personal Gleanings

Frederick J. Nystrom, Jr., formerly in the employ of the International Shipping Co. at Seattle, was promoted recently from the rank of captain to that of major at the San Francisco Port of Embarkation, where he is Operations Officer of the Port Air Office.

Allen H. Jones, formerly on the staff of the Inter-Ocean Steamship Company at Portland, was recently promoted from the rank of captain to that of major. He is Material Control Officer for the Port Air Office at the San Francisco Port of Embarkation.

J. H. Hurd, who has been general agent, Matson Line, Los Angeles, is now associated with Alexander & Baldwin, Ltd., making his headquarters in San Francisco.
Succeeding Mr. Hurd at Los Angeles, in Emiliary Mr. Hurd at Los Angeles, in Emiliary Mr. Hurd at Los Angeles in Emiliary Mr.

geles will be H. E. Pippin, from the San Lines see solling

Robert Moran, pioneer Seattle steel slup and her it the turn of the century, passed away on March 17. He was one of the most powerful and influential personalities in shaping the industrial life of the Puget Sound district.

James H. Withers has joined F. J. Hearty & Co., Los Angeles and San Francisco manufacturers' rep



JAMES H. WITHERS

resentatives, as a partner. Mr. Withers was for a number of years associated with the Petroleum Equipment Co. of Los Angeles. The Hearty organization has been the California representative for the Edward Valve & Mfg. Co., Inc., for nearly 25 years.

Walter G. Willson, for the past 18 years Westinghouse manager at Phoenix, Ariz., has been named Los Angeles manager for the Westinghouse Electric & Manufacturing Co., according to recent

WALTER G. WILLSON



atmount ement by Chas A Dostal of San Francisco, Parthe Coast District manager for the company.

Mr. Willson succeeds A. J. Bronold, who is being transferred to Pittsburgh, Pa., and promoted to a new executive post with B. W. Clark, vice president in charge of sales. Mr. Willson will be succeeded at Phoenix by Howard S. Warren of Glendale, Calif., Westinghouse application enginer at Los Angeles for the past 21 years.

Waterfront Employers

Officers of the Waterfront Employers of Washington were reelected at the annual meeting of the organization. They include Keith J. Middleton, president; M. G. Ringenberg, executive vice president and manager; and H. H. Lawson, treasurer.

Trustees were chosen as follows:

L. W. Baker, Alaska Steamship Company; E. C. Bentzen, Consolidated - Olympic Line; H. W. Burchard, Furness Pacific, Ltd.; R. C. Clapp, Rothschild International Stevedoring Company; H. E. Rhoda, Luckenbach Steamship Company; L. J. Rogers, Weyerhaeuser Steamship Company, Tacoma: William Semar, Northland Transportation Company; F. E. Settersten, Griffiths & Sprague Stevedoring Company; S. B. Stocking, Shaffer Terminals, Inc., Tacoma; R. A. Tinling, Dodwell & Co.; W. D. Vanderbilt, W. R. Grace & Co.; and C. B. Warren, Mexander & Baldwin, Ltd.

Congressional Committee

Working on the problem of the steady flow of war material, a committee of six congressmen and one congresswoman were studying conditions in Pacific Coast ports during April.

Members of the group were: Congressmen Edward V. Izac, chairman, of San Diego; John Z. Anderson, also of California; John Fogarty, Rhode Island; Melvin J. Maas, Minnesota; James W. Mott, Oregon; George J. Bates, Massachusetts, and Congresswoman Margaret Chase Smith of Maine. Accompanying the party is John Lewis, clerk.



by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

VIII-Electric Propulsion Equipment (cont.)

Main Generator

The main generator is rated at 5400 kva, 3715 rpm, 2370 volts, 1.0 power factor, 3 phase, 62 cycles; it is driven by the main turbine through a solid-coupling connection. The generator has a single bearing located at the outboard end; the coupling end is supported by the turbine low-pressure bearing.

Frame

The stator frame and covers are built for a top-mounted air cooler, and form a completely enclosed unit construction requiring no air seals or connections under the machine.

A baffle over the top of the core and windings protects these parts from water that might drip from the cooler tubes. A drain pipe leads from the baffle to the bottom of the frame where a U-shaped sight drain allows the water to run out. A clean-out plate is also furnished on the bottom of the frame.

The air cooler is provided with double tubes and inner and outer tube sheets to protect against leakage. A drain tube leading from the space between the tube sheets to the outside of the frame above the foot will allow any leakage to run out on the side of the

frame and thus be indicated visually.

The air-cooler cover is provided with a window on one side above the top of the cooler, and a light is permanently installed inside the cover, adjacent to the cooler. This allows inspection of the top cooler tubes during operation to detect excessive condensation, and thus allow reducing the water flow if the water is colder than normal.

The frame, fabricated from steel plates and bars, is supported on each side by steel footplates. Dovetail steel ribs welded rigidly to the frame webs carry the core laminations, which are clamped together by flanges keyed to the ribs at each end of the core. The flanges also carry the binding rings to which the end portions of the stator winding are lashed. The stator windings are form-wound and completely insulated before assembly in the core. All coils are interchangeable.

Field

The field core is a solid forged shaft in which open-type radial slots are milled to receive the concentric machine-wound coils insulated with mica tape and armor. Metal wedges in the slots above the winding hold the coils in place radially. The end portions are blocked between core end and

end flange and are covered with U-shaped saddles. Forged-steel retaining rings shrunk on over the end flanges hold the coil ends in place radially. The generator air gap is 0.875 in. The average resistance of the field at 25 C is 0.440 ohm and at 85 C is 0.541 ohm. The generator is Y-connected one circuit per phase. Six leads are brought out to connection straps located at the bottom of the generator on the outboard end.

Normal field current at 3715 rpm is 165 amp. Maximum field currents at normal full speed and at reduced speeds are as follows:

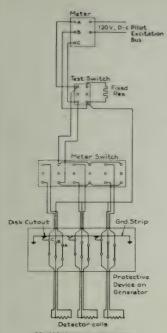
	Max. S	afe Cor
Rpm	Fld. A	Ampere
3715		174
3600		170
3000		158
2400	******************	145
1800		133
1200		120

Collector Rings and Brushes

Collector rings are made as a unit and consist of two forgedsteel rings shrunk on over a mica shell molded on a forged steel shell. Leads come out through slots in the shell and are connected to the corresponding leads from the field winding.

The brush-rigging consists of two bus rings mounted on three insulated studs attached to the bearing cap, and protected from above by a steel drip cover fastened to the outboard pedestal. Each bus ring carries seven brushholders. One brushholder on each ring is insulated from the bus ring and connected to the field temperature indicator. Recommended brush pressure is two pounds. Each notch that the fulcrum is moved downward increases the brush pressure 1/2 lb., the first notch representing 11/2 lb. At assembly, the brush rigging should be adjusted in the axial direction so that the average centerline of the brushes will correspond with the centerline of the ring when the unit is hot.

The brushes are natural-graphite, General Electric Grade H. The brush size is 2½ in. x 1½ in. x ¾ in.



TEMPERATURE METER WIRING

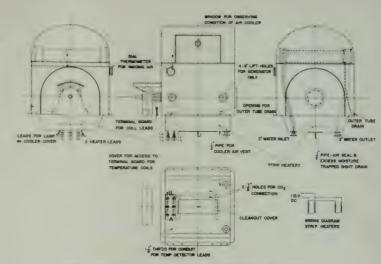
Ventilation

The generator is ventilated by means of fans mounted on each end of the rotor, taking air from the top, between the outer and inner air shields. Part of the air is forced directly into the air gap, and then radially outward through ducts in the stator core. The remaining air flows through pipes back of the core into a central compartment, from which it is led radially inward through ducts to the air gap, thence with the other air outward through the end ducts and around back of the core in the discharge compartments to the top of the machine, where it passes around a baffle and upward through the air cooler to be recirculated.

A dial thermometer is mounted on the frame for indicating the temperature of the air going into the generator from the air cooler. The maximum air temperature should be 104 F (40 C).

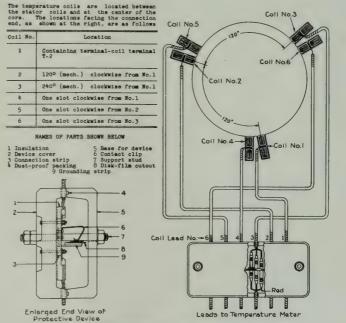
The rotor is ventilated by air entering through the end flanges, passing under the end windings, and thus into channels cut in the teeth of the core. The air dis-

(Page 90, please)



ABOVE: DIAGRAM OF GENERATOR, SHOWING LOCATION OF OPENINGS
BELOW: DIAGRAM OF STATOR TEMPERATURE COILS

TEMPERATURE-COIL LOCATION IN GENERATOR STATOR WINDING



This illustration shows the location of the temperature coils in the generator stator winding, and their connections to the protective device. This device provides protection in event a dangerous potential is given accidently to any or all of the temperature detectors, and consists essentially of the insulating disking control of the connection strips (3), and the contact clips (5) Far (1) seventher the connection strips (5), and the contact clips (6). Far (7) seventher the connection strips (7) and the contact clips (6). Far (8) seventher the connection strips (8) seventher the context of the context of the connection strips (8).

The insulating disk-film cutoute consist of two this aluminum disks separated by a thin disk of treated fabric having such a dislective strength that its puncture voltage is well below that considered safe both for the attendant and the temperature indicating meter.

If a breakdown of a disk-film cutout occurs through a failure of the armature colinsulation, the cutout must be replaced with a new one before further temperature readings can be taken. After correcting the condition leading to the breakdown, remove the cover of the device by removing the nuts of stude (7), and insert a new disk-film cutout.



Steady as you go!

100/200 A 100 A 10

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT

A DEPARTMENT FOR DECK OFFICERS

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome St., San Francisco, California

CONVOYS OUESTION

Dear Skipper:

For the benefit of we "Old Timers" who have been beached, or have swallowed the anchor, during the years when our merchant marine was very ailing, and much on the decline and who now have the urge to return to sea, where our knowledge and experience could contribute much to the war effort, would you bring your column up to date and write of things and conditions as they are today? Here are a few suggested items that would help all of us on the chicken ranches or in the shipyards as we prepare to do our bit, and they might even prove of educational value to the many young men that the schools are turning out as officers every day.

(1) Describe the routine and methods of handling ships in convoy. (2) Give any pointers that would be helpful in taking and keeping position in convoy. (3) What are the rules and regulations covering the armed guard placed on board, and are they part of the crew? Who is responsible for the ship when under naval convoy, especially when it is an allied naval convoy, whose laws may differ from ours? (5) What are the recent changes in cargo handling brought about by the war?

These are only a few of the

many questions I could ask, and I am sure that with your contacts along the waterfront, and your knowledge of the newer ships, also the problems of the men who man them, you could give us a great deal of useful knowledge if you would cover this field in your monthly articles; and it would help all of us to keep them sailing, "Steady as You Go."

Yours truly, GEORGE L.

ANSWER

The skipper never knowingly wrote an article that wasn't up to date, at least to those who requested the information given.

For security reasons, much about convoys must be left unsaid. and for this reason we have refrained from writing on this timely subject for these many months; however, with repeated requests, such as yours, coming in, we have decided to take this matter up and do our best, with due regard for the safety and welfare of those who are out there carrying on. We shall discuss the practical side of the questions without divulging anything that might even loosely be construed as of benefit to the enemy.

A convoy is made up by the commandant of the district, upon whose shoulders falls the problem of getting a mass of ships of all sizes and speeds to their destination safely. His picture of an ideal

situation would be one where he could make up a complete convoy of vessels, all of which would be able to run smokeless, at sixteen knots for the entire distance. This, of course, he can never accomplish, so he does the next best thing and groups the ships as closely as possible by their speed, for the slowest vessel he includes governs the speed of the entire convoy for the voyage.

Making up Convoys

When a vessel is nearly ready to proceed to sea, her master must report to the captain of the port, who will assign him to a convoy and give him his time of sailing and the location of the rendezyous.

When the convoy commander or commodore is selected, he will call a conference of the masters of the vessels making up the convov. At this meeting he will discuss the special distinguishing signals to be used in the convoy. He will present a picture of all of the vessels, or rather a plan of the vessels and their position in the convoy, and assign identification numbers and signals to each vessel. He will explain the position of his ship and the position of the guide vessel for station keeping. The convoy commander will make known all of the latest information that a master needs in the proper and safe handling of his vessel, and he will issue rules and instructions that the master is to follow rigidly in the event of encountering enemy action.

Master's Problems

As master, the first difficulty you will encounter is the taking of your station in the convoy, and once having gained your position, eternal vigilance is the price you must pay to keep it. It is of utmost importance that you keep good station or position for the safety of your own vessel, as well as the safety of the other vessels in your group.

You will be given two intervals. One of these is the distance you are to remain astern of the vessel next ahead of you. The other is the distance you are to keep between the vessels abreast of you on either side. To enable you

to keep these distances, you are given the height of the mai most from the waterline of all of the vessels that make up the convoy. He sure to refer to this list every time you or the vessels around you change position in the convoy.

Position in Convoy

If you are directed to keep 500. vards astern of a vessel, the height of whose mainmast is given as 100 feet, the problem is solved very simply with the sextant and Table Nine in Bowditch. For the solution; 500 yards is nearly one quarter .25 miles. With this as one argument and 100 feet as the other, we find by interpolation that the angle between the main top and the water line must be 3 degrees and 55 minutes (3° 55'). Measure this angle with the sex tant, and if it is greater than the computed angle, you are too close, or if less than the computed angle, you are too far astern.

This very same method will apply to the vessel on your beam. A word of caution is needed here, though, for it may happen that you are between two vessels that have not allowed you your full interval. If this be true, it is well to split what interval you have between the two of them, as well as you can, while keeping your proper position behind the vessel ahead of you.

A third consideration here is to keep your position on the line of bearing with the convoy commander, or whatever vessel has been assigned as guide. This is done by setting your pelorus on the line of bearing and checking it constantly, or by frequent gyro bearings, if you have a gyro on board.

The fact that you must maintain a position on three moving objects, all subject to fluctuations of speed and helm, makes it obvious that a watch officer must be alert at all times to meet these sudden fluctuations. There are several little things that help out considerably, and with a little experience one acquires a knack for keeping his place easily. These

tips we gathered from experience

Checks on Position

Once you leve teadied your vessel down on her station, check her position a few times with the sextant, then study the vessel ahead of you for markers that will guide you. On some ships the forward booms will appear to just rest on, or cut the poop of, the vessel ahead, or the block of your jumbo gear will just rest on top of the wheelhouse. Use your jack staff with the waterline, or any such line available to you. Once you have learned a few checks of this kind about your vessel. you will know at a glance whether you are creeping up on or dropping back on your leader.

For the vessels on either beam, you can check them more often until you establish means of identifying the distance, such as being able to recognize items on deck when getting closer or losing familiar items as you broaden out.

If you should find that you are dropping back on the fellow ahead of you, bear in mind that he is probably no more perfect in his station-keeping than you are; so, before altering your speed, take your sextant and check on the fellow ahead of him for your distance, or on the guide. If your position with the guide is correct, let the vessel ahead of you find his error and get back in position. If you drop back or pull ahead unnecessarily, the entire column behind you must do likewise.

Should you find it necessary to alter your speed, remember that when you increase speed a couple of revolutions it will take the ship a few minutes to feel it, and likewise it takes time for her to lose this increased speed: therefore you should use increases or decreases in speed with caution, and do not expect to get back on station immediately. It is far wiser to come up on your position slowly, and to be on standard speed when you get there, than to overrun the mark, and have to drop back and do it all over again.

Night Checks

At night, if your vessel is no position when darkness sets in. the other vessels in the convoy up as objects having a visual size and shape, and only a few outlines will be distinguishable. These you they become familiar to you it becomes easy to judge whether distinct, and to act accordingly. It is a natural tendency for convoys to broaden and spread out a bit ing that it is getting too close. There is no reason, or rather no speed at night as well as she did during the daylight hours, so fight this tendency as much as possible. and when dawn breaks it will not be such a task to get the convoy herded together again, and in turn will make it easier for the escorting vessels to do their job more efficiently, thereby increasing the protection they give you.

Signaling

The Confidential Merchant Ships' Signal Book, known as "Mersigs," is a visual signaling code and book of instructions for communication purposes between vessels in convoy, or between merchant vessels and vessels of the allied navies. The signal equipment required for communication by this method must be kept in readiness and in good repair. Visualize and learn all turning and wheeling signals and the procedure in using them before you put to sea. It would be impossible to know the number of vessels that have been lost, that might have been saved, and in there now doing their bit, had they understood fully the use of these signals.

It is by these signals that your convoy commander can communicate with you in a language that the enemy does not understand. Remember that the signals for turns are of two types—turn signals and wheeling signals. A wheel change is a change of course of twenty degrees, and may

be repeated, or rather an additional twenty degree change may be ordered while the first change is being made by flashing the signal a second time, with the execute when the lights go out.

There is also a change of course by a wheeling movement for the column of ships. Study the procedure for this, which is also confidential, and is found in your "Mersigs, Vol. 1." There are turn and emergency turn signals which direct turns up to ninety degrees and are used principally as emergency maneuvers to avoid enemy action.

Zigzagging

When zigzagging in column, it is imperative that you have the correct zigzag plan, and that you understand the first course that you are to steer. There is a distinct difference in the various plans, which I am not at liberty to divulge, and just because you have had experience with one method, do not feel that you understand them all. Read the instructions carefully in the front of the book before attempting to use it.

It is sound practice to make up a schedule for the compass course to steer at each change on scratch paper, and have the time for each new course plainly indicated. If this is made up correctly and hung near the clock with a thumb tack, chances for mistakes are greatly minimized. It is very embarrassing to you and upsetting to the man behind you if you start to make a swing in the wrong direction on one of the legs.

The different legs of the zigzag are executed on the even minute of the time indicated, and to be uniform, all clocks must be correctly set before the first course is changed. A very brief error in time will throw you out of position, and as this error is magnified with each change; if allowed to continue, upon the return to the base course you will find yourself out like a lone wolf.

Standard Rudder

It is well always to make each change of course with a uniform amount of rudder when traveling in column, or when using zigzag. Twenty degrees of rudder is a good amount to start with, and I would recommend trying it once or twice on the fellow ahead of you. If it brings you out of position, try using a little more or a little less, as the case may require; but before changing the amount of rudder you use, check and be sure that you are not changing course ahead of him. Watch his rudder with your glasses as the time to change approaches, and the instant that you see his rudder start to move in the direction of the required change, put yours over also. This will often bring you around in proper position when relying on time alone, will put you out there ahead of him, and therefor out of line, especially if he has learned to change on the rudder of the fellow ahead of him.

Establishing a standard rudder for use on board your ship helps you in many ways, for it keeps each helmsman using the same amount of wheel at all times, day and night, and I cannot recommend its adoption too strongly.

"Seaman's Eye"

Lastly, in convoy, as in anything else about handling a ship, no amount of rules nor reading will take the place of sound judgment, and what our navy brothers like to call "Seaman's Eye." A complete understanding of the operation of the convoy and of your part in it is a big help. All of the information given you by the convoy commander and the captain of the port are given you for your information and guidance. Read it, study it carefully, and understand it.

We shall continue next month with further information about the handling of a merchant ship under war conditions, and will take up the balance of the questions from our correspondent.

"The Skipper" would also appreciate your experiences and any tips that you may have picked up on your voyages during these days of total war, that he may pass them on to those who are to follow you as they go on about our job of delivering the goods.

YOUR PROBLEMS ANSWERED

(Continued from page 87)

charges to the air gap through small openings between the wedges forming the tops of the channels. Air also flows radially out through the end windings between the retaining rings and the core.

All the above air passages should be kept clean and free of obstruction,

Temperature Coils

Six resistance temperature detectors are embedded in the stator winding slots as shown. These detectors are located between coil sides in the center of the core, and leads brought out through armored cables to a terminal block and protective device mounted in an enclosed space on the side of the frame at the outboard end.

The detectors are non-inductive, of copper wire having a temperature coefficient in accordance with U. S. Bureau of Standards of .00426 at 0 C, and .00385 at 25 C. They are accurately adjusted to a resistance of 10 ohms at 25 C, and require an excitation current of 0.06 amp.

Temperature-Meter Equipment

The temperature meter operates on a circuit of approximately 12 volts, direct current, obtained from the 120-volt, d-c pilot-excitation bus through a self-contained resistance.

Selector switches permit connection of any one of the detectors or the calibrated (fixed) test resistor to the meter. The test resistor should give a meter reading of 70 deg C. A diagrammatic sketch of the wiring is shown.

To test the equipment, turn the left-hand switch to the TEST position; the needle should deflect to the 70-deg point. Any plus or minus deviation from this point must be applied as a correction to the temperature readings.

After reading all detectors, it is customary to leave the switch connected to the detector that shows the highest temperature in order to obtain continuous indication between readings. The right-hand switch must be in the

OFF position before the left hand switch becomes effective

Frequent and regular checks should be made against the test resistor for any deviation from the 70 deg point. With voltage off, the needle will float.

When the meter fails to give a temperature reading for any particular position of the selector switch, the disk film cutout for the corresponding detector coil has been punctured. This punctured cutout must be replaced with a new one before further temperature readings can be taken.

Heating Coils

To prevent accumulation of moisture in windings, electric strip heaters are located inside the inner shields, one at each end of the generator. Current to the coils should be turned on during periods when the generator is idle in order to maintain a tempera ture within the generator of approximately 4 degrees above the room temperature. This prevents condensation on the inside surface of the generator, and especially on the insulation of the stator and rotor windings.

Fire Extinguisher

In case of fire within the generator, open the generator field switch and admit CO² to the generator. Disconnect the generator from the line and shut down the turbine so that the extent of the fire damage may be determined.

The windings may be inspected by removing the outer and inner air shields. If there is no apparent damage, and measurement of the insulation resistance is satisfactory, the turbine generator may be started slowly with the end shields removed; connect the generator to drive the propulsion motor momentarily. The appearance of smoke or are indicates that the windings must be repaired.

The generator should not be operated under load for more than two or three minutes with the end shields removed.

Training Idea Developed at Moore's

by Sam Le Count

A new development in the training of marine electricians is taking place at Moore Dry Dock Company. A "Home Study Course for Marine Electricians" has been written under the guidance of a committee of company foremen. Every trainee is assigned one chapter each week from this eleverly-written course. At the end of the chapter are a number of questions to be answered and returned the following week.

The first three chapters are introductory, covering the nomenclature of ships, an outline of the work performed by marine electricans, and some facts concerning the differences between direct turbine, turbo-electric, diesel, and diesel-electric drive.

Chapters four to nineteen deal with the basic facts of cable installation and electrical theory. In this section is information on how to make up a kick-pipe area, measure off and pull in a cable run, install a bulkhead tube, and connect up fixtures. There are also three chapters on the testing of all marine electrical equipment. The actual testing is usually not a part of the trainee's work, but a careful explanation of testing procedure demonstrates to the trainee the standards of perfection which must be met before the ship can

After finishing chapter nineteen the trainee takes his concluding five chapters in one of the four fields of specialization: Power, Lighting, Interior Communicacations, or Maintenance. These

The author is Training Supervisor, Electric Department, Moore Dry Dock Company, chapters are more detailed and in clude some blue print reading and layout work.

At the conclusion of the course the trainee is given a written examination covering the material of the home study course and its practical application on the job. These examinations are conducted by the regular Electrical Department instructors. Shortly after passing this examination the trainee receives his journeyman's rate and is prepared to carry out independent work.

Over 700 electrician trainees including both men and womenare now undergoing training through the use of the home study course. The response to this new type of industrial education has been very enthusiastic. Several other crafts are now hard at work preparing home study courses in pipefitting, sheet metal, shipfitting and welding theory.

American shipyard training programs are making a valuable though often overlooked contribution to the personnel training of the armed forces. Scores of electricians now performing essential work in the military and naval services received their initial training in the shipyards. The shortage of electricians would be far more serious were it not for the shipyard vocational training programs.

Home study is a time-honored American institution, but has never before been used in exactly this manner in industrial education. Moore Dry Dock Company has started a new training idea which is likely to spread soon to many other war production plants throughout the country.



On the Ways of SHIPS IN THE MAKING



MARINSHIP LAUNCHES ITS FIRST TANKER

A new phase in the already immense program of shipbuilding in the San Francisco Bay area was inaugurated on April 25 with launching at the Marinship yards at Sausalite, California, of 5. S. Escambia. This tanker was the first of a scheduled 22 to be built by the yard this year for the Maritime Commission.

(Photos courtesy Marinship Corp.)

Huge Contract For Calship

California Shipbuilding Corporation has been awarded contracts to build 50 tankers and 84 Victory ships for the U. S. Maritime Commission, John A. McCone, Calship executive vice president, announced on April 20. Roughly, the tankers will be the same size as Liberty ships, while the Victory vessels will be larger and faster, he said.

To date the yard has launched 172 Liberty ships and delivered 164 of the 10,500-ton cargo carriers to the Maritime Commission.

In striking contrast to its first few ships, which required nearly 300 days to complete, the current yard record is 23 days from keel to launch and 12 days in outfitting.

Typical of the constantly-increasing production tempo of the Bechtel-McCone yard is the fact that recently it set a new world's record by erecting 5,496,000 pounds of steel and on the same day completed 132,000 feet of welding.

Keel for the first tanker is scheduled to be laid soon after the 200th Calship Liberty ship slides down the ways,

MERCHANT SHIPBUILDING FOR MARCH

American merchant shipyards during March smashed all previous records for ship deliveries with the completion of 146 new vessels, totaling 1,516,000 tons deadweight. March output corresponded to a rate of more than 18,000,000 tons a year.

Of the 146 ships delivered in March, 103 were Liberty ships, 19 were the Commission's longrange C-type vessels, 12 were large tankers, 11 were of special types, and one was a powerful seagoing tug. In addition, a number of smaller craft, including three harbor tugs, were delivered into service.

West Coast yards held the lead for March in tonnage output by delivering 50.89 per cent of the total; the East Coast was second with 36.49 per cent; and the Gulf Coast turned out 12.62 per cent.

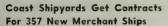
The Oregon Shipbuilding Corporation of Portland, Oregon, continued to lead the shipbuilding field, delivering 18 Liberty ships, this representing a rate of one and one-half ships per way for the month. Close upon its heels, however, was California Shipbuilding Corporation, Los Angeles, California, with 17 Liberty ships; and in third place was Bethlehem-Fairfield Shipyard, Inc., Baltimore, Maryland, with 16 for the month.

The complete list of yards and their deliveries is as follows:



SHIPY ARD DELIVERIES IN MARCH

SHIPYARD	No. of Vessels	Type of Vessel
Alabama Dry Dock & Shipbuilding Co.	2	Tankers
Mobile, Alabama Avondale Marine Ways, Inc.	1	Sea-going Tug
Westwego, Louisiana		
Bethlehem-Fairfield Shipyard, Inc	16	Liberty
Bethlehem-Sparrows Point Shipyard, Inc	2	Tankers
Sparrows Point, Maryland		
California Shipbuilding Corporation	17	Liberty
Consolidated Steel Corporation, Ltd.	6	C-1 Cargo
Wilmington, California		
New Orleans, Louisiana	5	Liberty
Federal Shipbuilding & Dry Dock Co	3	C-2 Cargo
Kearny, New Jersey Houston Shipbuilding Corporation	5	12h A.
Houston, Texas		Liberty
Ingalls Shipbuilding Corporation	2	C-3 Cargo
Pascagoula, Mississippi J. A. Jones Construction Co., Inc.	. 1	Liberty
Panama City, Florida	· '	Liberty
Kaiser Company, Inc.	2	Tankers
Swan Island, Portland, Oregon Kaiser Company, Inc.	9	Special Type
Vancouver, Washington		Special type
Kaiser Company, Inc. (outfitted at Oregon) Vancouver, Washington	1	Liberty
Kaiser Company, Inc	2	Special Type
(Richmond Shipyard No. 3A), Richmond, Cali	ifornia	
Marinship Corporation	2	Liberty
Moore Dry Dock Company	3	C-2 Cargo
Oakland, California		
North Carolina Shipbuilding Company	10	Liberty
Oregon Shipbuilding Corporation	18	Liberty
Portland, Oregon		
Pennsylvania Šhipyards, Inc Beaumont, Texas	2	C-1 Cargo
Pusey & Jones Corporation	1	C-1 Cargo
Wilmington, Delaware	7	I the sealer
(Richmond Shipyard No. 1), Richmond, Calife		Liberty
Permanente Metals Corporation	11	Liberty
(Richmond Shipyard No. 2), Richmond, Califo South Portland Shipbuilding Corporation		Liberty
South Portland, Maine		Liberty
Southeastern Shipbuilding Corporation	3	Liberty
Savannah, Georgia Sun Shipbuilding and Dry Dock Co	6	Tankers
Chester, Pennsylvania		
Western Pipe & Steel Company	2	C-3 Cargo
San Francisco, California TOTAL		
	146	



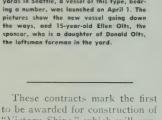
Pacific Coast shipyards have been awarded contracts for the construction of 357 new merchant ships, it was announced on April 22 by the Maritime Commission, which also disclosed that 112 additional contracts for ships had been awarded to yards in other parts of the nation.

Of the ships to be built in the West, 131 are high-speed tankers,

189 are the new design "Victory Ships," and 37 are Libertys.

The new vessels will be completed by the end of 1944.

ARMY TUG LAUNCHED First of a series of six ocean-going tugs ordered by the Army from the Sagstad Shipyards in Seattle, a vessel of this type, bear-These contracts mark the first "Victory Ships," which will supplant the familiar Liberty ship as the principal emergency type in the Commission's program.



Although of approximately the same deadweight tonnage as the Liberty, the "Victory Ship" will be larger and considerably faster than its predecessor, and turbine propulsion will be installed in many of them.

Complete list of yards and ships to be constructed under these new contracts is as follows:

YARD	Vo. of Ships	Type
Marinship Corporation, Sausalito, Calif.		Tankers
Kaiser Company, Swan Island, Portland, Ore		Tankers
Kaiser Company, Vancouver, Wash	. 48	Tankers
California Shipbuilding Corporation, Wilming	- 20	Liberty
ton, Calif.	84	Victory
Oregon Shipbuilding Corporation, Portland	, 17	Liberty
Oregon	. 105	Victory
Sun Shipbuilding & Dry Dock Company, Ches-		•
ter, Penn.	. 75	Tankers
Ingalls Shipbuilding Corporation, Pascagoula		
Miss	. 10	C-3
North Carolina Shipbuilding Company, Wil-		
mington, N. C.		C-2

New Contracts For 460 Ships

Additional contracts for the construction of 460 merchant ships, including 222 new design Victory ships, were announced by the United States Maritime Commission on April 24. The awards bring the total number of Victory ships contracted for to 411.

In addition to the 206 highspeed tankers previously announced, the Commission awarded contracts for the construction of 28 more. The balance of the contracts call for the construction of 210 Emergency Cargo or Liberty ships.

Complete list of yards and ships to be constructed under these new contracts is as follows:

YARD .	No. of Ships	Туре
Bethlehem-Fairfield Shipyard	15	Liberty
Baltimore, Maryland		Victory
Permanente Metals Corp.		Liberty
(Richmond No. 1)		Victory
Richmond, California		·
Permanente Metals Corp.	6	Liberty
(Richmond No. 2)	75	Victory
Richmond, California		
J. A. Jones Construction Co.	57	Liberty
Panama City, Florida		
J. A. Jones Construction Co.	55	Liberty
Brunswick, Georgia		
Alabama Dry Dock & Shipbuilding Co	28	Tankers
Mobile, Alabama		
St. Johns River Shipbuilding Co	52	Liberty
Jacksonville, Florida		

More Stars in Flag— 165th Launching

California Shipbuilding Corp. recently launched its 165th Liberty freighter, William Carson, at its Terminal Island (Calif.) yard, and at the same time received the eighth and ninth gold stars to be added to its Maritime Commission "M" flag for continued effi-

ciency. Four 100-per-cent-attendance-record employees received the stars from Court Eliason, re-

At the launching of the William Carson on April 7 were, left to right: Mrs. J. W. Con-lisk, metron of honor; Court Eliason, Mrs. Eliason, sponsor; and W. S. Yan Doren, Calship Industrial Relations Officer, aide to the sponsor.



gional industrial adviser to the Commission.

Sponsor of the ship was Mrs. Court Eliason, bride of the regional adviser, and Mrs. J. W. Conlisk acted as matron of honor. Twenty-six days on the ways, one day longer than the yard record, were required for the ship.

Pacific Coast Shipbuilding

California shipbuilding awards, through additional contracts placed during the last quarter of 1942, reached a cumulative total of \$2,615,859,000, or 15.7 per cent of the national total. Heaviest shipbuilding contract awards were placed during the third quarter of 1942, when California shipyards received \$823,115,000 in Government orders. For the three Pacific Coast states, shipbuilding contracts reached a cumulative total of \$4,508,531,000, or more than 27 per cent of the national total.

Pan-American Day

Four ship launchings in honor of Pan-American Day, April 14, and the christening of the ships by four women representing the Pan-American diplomatic corps, was announced by the Maritime Commission.

Senora Maria Guadalupe G. de Padilla, wife of the Mexican Secretary of Foreign Relations, sponsored the Benito Juarez, launched by the Houston Shipbuilding Corporation at Houston, Texas.

Mrs. A. C. Alencastro-Guimaraes, wife of the First Secretary of the Brazilian Embassy, christened the Jose Bonifacio, built by the North Carolina Shipbuilding Corporation at Wilmington, North Carolina.

The Miguel Hidalgo, built at the California Shipbuilding Corporation yards, Wilmington, California, was sponsored by the wife of General Juan Felipe Rico, Commander of the Second Military Zone, Ensenada, Mexico. The ceremony was wholly in Spanish.

Miss Regina de Comargo Neves, daughter of Adolpho de Comargo Neves, Brazilian Consul at Portland, Oregon, christened the Simon Bolivar, constructed by the Oregon Shipbuilding Corporation at Portland, Oregon, on April 10.

A Few Pacific Coast Launchings

On April 16 Mrs. Schuyler F. Heim, wife of the Commandant, Roosevelt Base, christened the S. S. Cape Greig at the Wilmington shipyard of Consolidated Steel Corporation. Many highranking Naval and Army officers attended the ceremonies. Cape Greig was the thirty-second C-1 type vessel to be launched at the yard.

From California Shipbuilding Corp., Wilmington, Calif., comes word of a number of launchings. On April 17 the S. S. William M. Gwin was launched 24 days after keel laying, breaking the previous yard record. On April 18 the S. S. Mark Keppel slid down the ways 23 days after her keel was laid. Launching of the S. S. Josiah D. Whitney on April 16 was sponsored by Mrs. D. W. Fernhout. wife of the chief of the Plant Engineering Section, U. S. Maritime Commission, Oakland, S.S. Wiley Post, a 10,500-ton Liberty ship. went down the ways on April 20. with Mrs. G. H. Macomber, wife of the Los Angeles District Traffic Manager of United Air Lines, as sponsor.

Eleven Launchings In 29 Days

U. S. Steel's two Federal shipyards, located at Kearny and Port Newark, N. J., recently sent 11 ships into the water in a 29-day period, culminating in launching of the twin destroyer escorts Levy and McConnell and the destroyers Black and Chauncey.

DESTROYER LAUNCHED

Christened for a hero of the Clvil War, the destroyer Johnston was launched on March 25 from the yards of the Seattle-Tacoma Shipbuilding Corporation in Seattle-Helmet-ed workmen watched as the vessel swept down the ways into the waters of Elliott Bay. Mrs. Marie S. Klinger of St. Louis was the sponsor. She is a grandniece of Lieut. John V. Johnston, for whom the destroyer was named.

Cape Meares Launched

Named for a point in the Philippines, the Cape Meares was launched on April 5 at Consolidated Steel Corporation's Wilmington (Calif.) yard. She was sponsored by Mrs. Maxwell Murray, wife of Maj. Gen. Murray. Commanding General, Headquarters Southern California Sector. Mrs. Murray was assisted by Mrs. Ord Preston, Jr., as matron of honor. Alden G. Roach, president of the yard, was the only speaker at the brief ceremony.

The Cape Meares, 31st C-1 type ship built at the yard, is a 12,900-ton cargo and passenger vessel.

The yard was recently awarded a star to be added to its Navy "E" burgee for continued excellence in production.

Kruse & Banks Busy

Kruse & Banks Shipbuilding Co., Inc., North Bend, Ore., an-



nounce that they launched YMS 267 on March 6 and YMS 268 on April 15. YMS 265 was delivered on March 6 and YMS 266 on April 6. In addition, four ATR 165-foot tugs for the U. S. Navy (173-176) are now under construction.

Seattle-Tacoma Launchings

The Seattle-Tacoma Shipbuilding Corp., Plant No. 1, Tacoma, Wash., announces launching of the U.S.S. Cordova on January 30; Speaker, February 20; Edisto, March 9; Estero, March 22; and Jamaico in April.

SHIPS PLAY ROLE IN MILITARY HIGHWAYS

U. S. Engineers ferry M. V. Alcan, powered by a "Caterpillar" diesel D 17000 marine engine, transports supplies across a large river along the Alaskan Highway route.



MARINE DEPARTMENT
A E T N A I N S U R A N C E C O.
Q U E E N I N S U R A N C E C O.
MARITIME INSURANCE CO., LTD.
FIDELITY PHENIX FIRE INS. CO.
Commercial Hull Dept.
A U T O M O B I L E I N S. C O.

MATHEWS & LIVINGSTON

MARINE UNDERWRITERS

200 BUSH STREET SAN FRANCISCO Offices at: Colman Bidg., Seattle • 111 West 7th St., Los Angeles

Civilian Trouble-Shooters Keep Ships Moving

A detachment of civilian "trouble shooters" on duty with the Navy daily is getting new ships into war service and restoring older ships speedily and expertly under the Navy-Westinghouse Service Plan.

Another step in a peace-time program of following through after equipment leaves the shop, the Service Plan placed seasoned engineers aboard ships, in shipyards at home and in foreign naval bases.

The job of these men is to supervise new installations, attend trials, make emergency repairs and offer a general consulting service on equipment problems.

Recently an expert on main drive gear equipment flew from Pittsburgh to Houston, Texas, approximately 1500 air miles, to repair a submarine chaser. The chaser was restored to service in a few days. Under usual procedure, it would have been necessary to disassemble the equipment and take it ashore for repair.

A Westinghouse engineer, and former Naval Reserve lieutenant commander, W. B. Flanders, is advisory engineer to the Bureau of Ships. From his office at the company's South Philadelphia Works, Mr. Flanders keeps in close contact with the Bureau and shipyards. Any difficulties are reported to him immediately, he reports to the Navy, and then a joint report of the troubles and remedial measures is sent to naval officers at Navy yards and aboard ships all over the world.

As a companion program to its follow-through Service Plan, the company instructs Coast Guardsmen in maintenance and operation of electrical propulsion equipment at classes in East Pittsburgh.

New California Firm Of Marine Designers

With the association of Mario Palmieri, California naval architect, the Coast Marine Engineering Co. of Long Beach, Calif., which has already done very favorable work for various s mall yards in the Los Angeles area during the last few months, enters now into the field of ship design and supervision.

Mr. Palmieri graduated as a naval architect and mechanical engineer in June, 1921, began his California career with the Los Angeles Shipbuilding and Dry Dock Corp. as hull draftsman in October, 1922. Among his most important contributions to this state are his work as associate bridge designing engineer of the Division of Highways, his teaching of naval architecture at the University of Southern California, and his work as chief of the Hull Scientific Department of the two Consolidated Steel Shipyards at Wilmington and Long Beach. Lately he held the position of naval architect of the Astoria-Warrenton Shipyards, Inc., for about six months, but resigned to return to California to establish in Southern California a firm of consulting naval architects of the type prevalent on the East

Chief draftsman is E. E. Hardesty, well known in Southern California naval circles. His work as chief draftsman of Harbor Boat Building Co. in San Pedro in the field of small boat design and detailing has won him the esteem of the U. S. Navy, which now relies on him for development of plans for small yards of the Los Angeles area. He studied engineering and naval architecture at the University of Southern California and the California Institute of Technology.

With Mr. Palmieri and Mr. Hardesty is associated a small group of highly-reputed technicians and draftsmen,

MODERN FURNITURE .. FOR TANKERS

(Continued from page 67)

lock combinations are required for each ship.

Accommodation Ladders Also Part of Contract

In addition to the furniture being manufactured for installation aboard ship, an accommodation ladder for each ship is included as a part of the contract. These ladders are approximately 35 feet in length, and weigh more than a ton. Principal lumber used for construction is oak. Fender rollers are of lignum vitae. The ladders are equipped with all steel fittings and cast steel stanchion sockets; solid steel bars are used for the stanchions.

Marine Division Widens Scope of Products

Since the inception of war production at the Weber company, activities of the organization have been largely devoted to the manufacture of a wide assortment of marine equipment of both wood and metal, in addition to a huge aircraft part assembly, control surface and plywood wing program.

The cowl ventilator production, mentioned earlier in this article, is of course one of the largest and most outstanding parts of its marine effort, but in addition to this several kinds of cargo and watertight hatch covers, steel doors, ammunition boxes, flag boards and lockers, miscellaneous storage tanks, metal furniture and many other types of equipment are included in the ever-widening scope of products being produced.



Launching of the Redwood 11

With Carl W. Flesher, Regional Director of the U. S. Maritime Commission, operating the automatic "guillotine" which severed her shoreside moorings, the Redwood II in a graceful sidemays launching slid down the ways at the Hodgson, Greene, Haldeman Shipyard in Long Beach on April 11.

The shipshape wooden barge, first of a series to be built in the Los Angeles-Long Beach area, is

Left to right: Mrs. Henry F. Haldeman, Mrs. Burch E. Greene, Mrs. J. S. Hines, Mrs. Carl W. Flesher.



181 feet in length. Non-propelled, it is designed for multiple towing.

Adding color to the event was the launching party with Mrs. Carl Flesher, personable wife of the Maritime Commission's director, wielding the champagne in true Babe Ruth style. Matron of Honor selected by the lovely sponsor was Mrs. James S. Hines, wife of Pacific Marine Review's genial publisher. Speakers included: Mayor Clarence Wagner, Carl Flesher, G. Bruce Newby of the Martime Commission, and Burch E. Greene, representing the builders.





Marine Equipment Firm In New Location

Thomas A. Short

winning his Chief's ticket "the Hard Way."

Assistant Manager of the firm is S. J. McKeeman, who came to the Short organization four years ago from the University of California, where he was graduated in

PMR brings its readers views of the new quarters of Thos. A. Short Company in San Francisco. Greatly increased space with splendid facilities for warehousing and displaying the products of the manufacturers represented have been achieved in this expansion move and the new location on Fremont Street is attracting much admiration.

Success of the Thos. A. Short Company has developed steadily over the years and this is the third expansion caused by growing demands for more space. The firm is the successor of Carleton V. Lane, marine equipment firm which in turn succeeded Ford & Geirrine, so well-known during and before the first World War.

Tom Short, managing owner, is the same enterprising sales-engineer who was Port Engineer for the Alaska Packers picturesque fleet for ten years, 1927 to 1937.



S. J. McKeeman, assistant manager.

He served his apprenticeship as Marine Machinist at the old Union Iron Works, cradle of so many of our present - day engineering leaders. During his career he joined the Union Oil Company

Mechanical Engineering with a B S Degree.

Of particular interest in the new location at 275 Fremont Street, which by the way, is directly in the line of vision from the San Francisco-Oakland Bridge trains, is the massive tile front bearing the firm's name.

The interior of the building is extremely spacious as one of our illustrations shows.

Tom Short is to be congratulated on the forward-looking expansion move and his countless friends will wish him well.



Spacious display and warehouse facilities feature the new Thos. A Short Company's location.

PACIFIC MARINE REVIEW



The massive tile front of the new building is spectacularly in the line of vision from the San Francisco-Oakiand Bridge train windows.

Unusual Launching

Something quite unusual in launchings took place at the Bellingham Marine Railway and Boatbuilding Company, Bellingham, Wash., on April 5, when eight-year-old Sara Elizabeth Schnabel, daughter of a marine fitter foreman, not only christened mine sweeper YMS 342 but cut a ribbon to release the trigger that started the ship down the ways. When the ribbon was cut,

weights dropped, driving out the dog shore that locked the lanuching cradles, and the ship began at once to move down the skids.

Calship Launching

On April 13, at 7 p.m., the Thaddeus S. C. Lowe, Hull No. 168, slid down the ways at the California Shipbuilding Corporation's Wilmington (Calif.) yard under the sponsorship of Mrs. C. P. Hubert, wife of one of the com-

pany's chief loftsmen. Mrs. C. S. Cowan, mother of the sponsor, was matron of honor, and M. J. Pecarovich, recreation director, was master of ceremonies.

Keel for the vessel was laid on March 17, 1943, and she was launched just 27 days afterwards. She is a 10,500-ton Liberty ship, and is named after the well-known inventor and scientist, who was born in 1832 and passed away in 1913.

Left: I. H. Grancell, head of the company bearing his name—manufacturers of Bestolife Lead Seal joint sealing and Anti-Seize compounds for ships and yards.

Right: Sherman Grancell, manager of the Los Angeles plant.





"Up from the Waterfront"

PROPELLER CLUB AT SAN FRANCISCO - HEARS PETER B. KYNE

"Up From the Waterfront"

Under this caption, Peter B. Kyne, famous author of many a sea tale that weighed anchor inside the Golden Gate to sail into popularity with reading millions, set out across a wide ocean of reminiscence, on April 21, at the Wednesday luncheon of the Propeller Club, at the St. Francis Hotel. Since it was Matson Day, Mr. Hugh Gallagher, Operating Manager of the Matson Navigation Company, invited Mr. Kyne as especially fitted to speak with

authority of the waterfront as pertinent to this company's long operation, and introduced the speaker as a man who had "come a long way up" from this colorful quarter of the Bay City.

Mr. Kyne remembers much, and recalled much, that those present will long remember. His reminiscence began where Mr. Kyne began, down close to ships, the many masts of which impressed him as a small boy as a forest stretching out into the blue waters. But, if

the blue waters were placid, Mr. Kyne's early adventures were just the opposite. Fists flew in those early days, and the young Irishman's fists were not idle, for it was an uphill trail he dropped into from early beginnings. With his fists, he collected overdue bills, and won his first raise in salary, from the \$8.00 per week that opened the gate of opportunity to the \$10.00 that then looked like affluence.

Hearing Mr. Kyne speak was like listening to one of his gripping yarns, and the fighting was pleasantly relieved by the speaker's ready smile, and twinkling eyes. Those were tough days, and he had to be a tough kid, for he did have an ambition, some day to sail his own ship. He never got

his ship, because he became a writer instead. But fighting to that end did fill his brain with ships, and men of the sea, and he launched ships, and manned them, to suit his fancy, and in his fancy sailed with them.

Much that he said pertained to rugged men of the sea, who tackled the impossible and did it. What he said of these men was a tribute to the grit and courage of mr. Merchant Marine, and to a performance which has written so large in our Nation's history. Those men walked with us at that luncheon, for Mr. Kyne is not only a story teller. He could have been a good actor, had he decided to be one.

But, more than story teller, and actor, Mr. Kyne is a philosopher. One could not help feeling this, at his mellow observance of human conduct. Nor could one fail to note the cleanliness of his philosophy. He admitted being called the Pollyanna of sea fiction, but professed no resentment at that classification. He said he considered it a high compliment, and that he was proud of thousands of letters from parents all over the



Guest speaker Peter B. Kyne (center) with Fred Doeiker, Grace Line, at his right, and Propeller Club President Hugh Gallagher, Matson Line, at your right.

country who said there was never anything in his stories unfit for young minds.

"I'd rather have that said of my stories," commented Mr. Kyne, "than anything else."

His admiration for Captain William Matson, the rugged founder

of the company that bears his name, called from Mr. Kyne high praise, and a confession of pride that the author could call the sailor his friend. He said he knew Captain Matson well, and admired him greatly for his probity and high sense of honor.

Matson Day at the Propeller Club in San Francisco brought these aboard. Clockwise from center front are: A. J. Harding, Stanley C. Davis, Ed Kelly, Henry Wolters, J. P. Thompson, Ed. Hendrieson, E. N. W. Hunter, R. P. Hasenauer, Sydney Walton, George Montgomery, Capt. Andy Townsend.





Atlas Awarded "E"



Mr. Kilberry accepts the award at ceremonies held at the Oakland factory on March 5.

son, presented the award, and Captain

A. B. Court, United States Navy

(Ret.), presented the "E" pins to the

In his acceptance speech, F. H. Kil-

berry, president of the company, commented, "It is in recognition of the

part that each of you employees have

played in fulfilling to date the impor-

tant task which has been entrusted to

us, that the Army and Navy have

honored us with the Army-Navy "E" award. Most important to me is the

fact that this award is given for a

employees.

The Atlas Imperial Diesel Engine

Company is another leading firm in

the Bay area which has been honored with the Army-Navy "E" for excellence in its production for the war

effort. The presentation was made at

an outdoor ceremony in Oakland on

March 5, which was attended by rank-

ing Army and Navy officers as well as

Major-General Frederick Gilbreath,

commanding general of the San Fran-

cisco Port of Embarkation, Fort Ma-

business leaders of the Bay region.



Captain A. B. Court, U.S.N. (ret.), Inspector of Naval Material for the Twelfth Naval District, pins the "E" lapel pin on Vice President G. F. Twist, who accepted the token pin on behalf of the management. F. H. Kilberry, president, and Charles Copeland, oldest employee of Atlas Imperial Diesel Engine Co., unfurl the flag awarded for high achievement.

period of six months only, after which our production record will again be reviewed to determine whether or not the "E" burgee shall continue to fly over the plant. I have yet to find that man or woman who did not do better work and put forth greater effort under a spirit of approval than under a spirit of criticism."

The company was incorporated in 1927, an outgrowth of the Atlas Imperial Engine Company, which was organized in 1916, and was the first manufacturer of diesel engines in the Western United States. Even before this, the forerunners of this company, founded about 1903, constructed the first Atlas diesel engine in 1914.

Triple-Header Award

A triple-header Maritime Commission award of merit, headed by the Blue "M" Pennant, was presented to the men and women of the Ingalls Shipbuilding Corporation on March 31, and the yard marked the occasion by sending two more 18,000-ton allwelded ships into the water in another of its two-at-a-time launchings.

Announcement of the winning of the award was made by R. I. Ingalls, chairman of the board of the Ingalls Shipbuilding Corporation, on receipt of a telegram from Admiral H. L. Vickery of the Maritime Commission. The presentation was made by Leigh R. Sanford, Gulf Coast Regional Director for the U. S. Maritime Commission.

In addition to the Commission "M" Pennant, the yard received the Victory Fleet Flag, symbol of the Emergency Fleet Program, and each of the 10,000 employees was given Maritime merit badges.

"We are particularly proud of this," Mr. Ingalls said, "as it gives proper recognition to the individual working men and working women who have made it possible for us to send our ships into the water under the schedule we have maintained..."

The program for the ceremony included an address by Hon. James O. Eastland, U. S. Senator from Missispipi, and music by the U. S. Army Band from Keesler Field. The ship launchings were sponsored by Mrs. William Ronald Guest and Mrs. William David Pelan, both wives of shipyard officials.

Fourth "E" Award

For the fourth time within a year, the "T" for excellence in production has been excellence in production has been awarded to employees at Fostar Wheeler shops by the Navy Department. In this instance a new Army-Navy "E" pennant "with Star" was presented at the Dansydle, New York, works, as indication of continued high production of war equipment on time.

Rear Vilmiral Clark H Woodward, who conferred the original "b" award last Vicenst, again made the joinnex to Dansville for the purpose of presenting the new burgee, as he had promised to do if the shops were successful in maintaining their high record for the second six months. In addition to Admiral Woodward, military personnel included: Liuetenant Commander W. S. Downs, U.S.N.R.; Lieutenant John T. Casey, U.S.N.R.; Lieutenant G. F. Langhor, U. S. N. R.; Captain R. G. Scherer, U. S. Marine Corps, recently returned from Guadalcanal.

Acknowledgment of the award was made by Ellsworth Easton, president of the Employees' Association, and he was followed by Captain Scherer, who presented the token insignia to a man and a woman selected to represent the body of men and women who earned the Star.

The ceremonies closed with singing of the national anthem, led by Carl Frank, director of the Dansville Central High School Band.

Signalizing its war production records, Foster Wheeler Corporation was recently given its fourth "E" Award. The illustration depicts presentation of the "E" with a star to the Dansville, New York, works.

A Star Has Been Added

For continued excellence in the performance of outstanding production of war material for the Armel Forces, Weber Showcase & Fisture Co., Inc., at Los Angeles, California, receives its first star on the Army-Navy "E" flag, which has been flying over the plant for the past six months. Presentation of the flag was made by Reor Admiral J. R. DeFrees, U. S. Navy. Shown with Admiral DeFrees are, left to right: Major G. E. Moreland, U. S. Army; Karl Weber, president; Glenn Schwander, company employee, who was chosen as one of the six war production heroes in Southern California; and Rear Admiral DeFrees.

A production close-up shows why the company was chosen to receive the star. Here is a portion of the metal department, showing ready service boxes for the U. 5. Navy under production. Included in the scope of Weber's war products are flag boards, metal furniture, diestamped cowl ventilators, ammunition boxes, miscellaneous storage tanks, watertight doors and watertight hatch covers, cargo hatch covers, various types of wood and metal aircraft assemblies, control surfaces and plywood wing assemblies, as well as many other special items.

Lower right: Thousands of ready service ammunition boxes like these have been produced for the United States Navy. This is just a typical example of the many unusual products made by the company since it has gone to war.











WM. POWELL CO.

Left: The Army-Navy "E" was awarded to the Wm. Powell Co. personnel in a colorful ceremony at Music Hall, Cincinneti, Ohio. Participating in the ceremony were Rear Admiral H. G. Taylor, C.E.C., U.S.N.; Lt. Col. Paul J. Carr, U.S.A.; Mayor James G. Stewart; James Coombe, president; George E. Weitkamp, Wm. Heilig, Oliver Gang, David M. Forker, Elmer Noll, vice president; Edward Bootes, president, he worker's union, and company personnel. Paul S. Perry, president, Perry-Brown, Inc., Gincinnati, officiated as chairman.

John Reiner & Co.

On February 20, in the presence of a distinguished audience, the employees and management of John Reiner & Company were presented with the Army-Navy "E," awarded for high achievement and excellence in war production.

The company has been specializing in the design and manufacture of diesel auxiliary units and diesel generating sets for marine and industrial application.

At the Army-Navy flag presentation to John Reiner & Co. Left to right: Commander Singer, John Nicholas, John Merk, Allen Reiner, John Reiner, Carl Clark, Eli Kowal, Charles Goldblatt and Major Alphin.

Among the distinguished guests who were present at the ceremony were Admiral Farwell, Admiral Hottel, Colonel Gray, Commander A. S. Kibbe and Lieutenant Commander W. Van Puhl. The Army was represented by Major Alphin, who presented the pins to two representative employees, Carl Clark and John Nicholas.

The Navy was represented by Commander Singer, who presented the Army-Navy "E" pennant to Mr. Reiner. Lieutenant J. Powers was master of ceremonies.

Johns-Manville Raises Flag

More than 4000 Johns - Manville workers and members of their families who packed into an improvised auditorium to celebrate formal raising of the Army-Navy "E" flag over their Manville, N. J., factory on March 24 received a remarkable tribute from Major General Thomas E, Robins.

"I am convinced," General Robins said, "that you men and women of the



Johns-Manville factory have a wider and more diversified part in the war effort than any other group in the United States!"

The major general, chief of the Construction Division, O.C.E., with other Army and Navy officers, inspected the

plant earlier in the day. The flag ceremony, staged at noon in one of the huge warehouse buildings that had been cleared for the occasion, was followed by a luncheon in which the entire plant personnel, wives, families and visitors were served.

Commander A. S. Kibbee, U. S. Navy, addressing the more than 4000 Johns-Manville workers and their families, who attended the Army-Navy "E" Award ceremonies at the Manville, N. J., plant on March 24.



LIEUTENANT JAMES E. SWETT



P. M. R. Salutes Jim Swett

Just a few months ago it was our extreme pleasure to chronicle the enlistment of J. E. ("Jim") Swett as a flying cadet.

We have always regarded young Jim as one of our Water-front boys, particularly because of his "growing up" around the environment of his dad's business, located in the shadow of San Francisco's famed Matson building. Yes, Jim is the number one son of popular George E. Swett, who heads up the Marine Equipment firm bearing his name.

Now comes the thrilling news of Marine First Lieutenant James E. Swett in heroic contact with Tojo's planes, in which more than one hundred fighters and dive bombers took part.

Jim Swett came out of the battle with seven Jap planes to his credit! The new ace who had been assigned the job of intercepting an enemy dive bomber formation, led his squadron at 14,000 feet against 15 planes and attacking a pair of bombers simultaneously, with the aid of his Ser-

geant, he started the spectacular duelling which resulted in the enemy making a target of the Jim Swett trio. Jap Zeros were downed to the score of seven and the Marine flyers did not receive a bullet hole.

Our hats are off to you Jim, and many Happy Landings!

Edward B. Egbert

Edward Barnes Egbert died of a stroke at Fresno, California, April 19, 1943, while on a journey to Bakersfield, California, in the interests of his company.

Egbert was born in Oakland, California, June 20, 1888, attended public schools there and later served his apprenticeship in the drafting room of the United Engineering Works.

In 1906 he entered the employ of Edward S. Hough, Consulting Engineer and Naval Architect of San Francisco and was engaged as draftsman and assistant to Mr. Hough until 1914 when he entered the employ of the Canadian Robert Dollar Company as assistant to Mr. Melville Dollar. In 1917 he was made Supervisor of Steel Ship Construction of the United States Shipping Board for the Northwest with headquarters at Portland, Oregon. In 1918 he was commissioned Lieutenant (j.g.) in the United States Navy and was First Assistant Engineer on the Steamer West Humhaw. In 1919 he resigned from the Navy and returned to the Dollar Steamship Company with headquarters at Vancouver, B. C., and was later Port Engineer for the Dollar Steamship Line at San Francisco.

In 1925 he left the Dollar Steamship Line and associated himself with Edward S. Hough, Jr., forming the firm of Hough & Egbert Company, Consulting Engineers and Marine Surveyors, at San Francisco, California.

He is survived by his widow, Mrs. Helen B. Egbert, a sister and two brothers, as well as a host of friends who mourn his loss.



Edited by Jerry Scanlon

Directs Speed-Up

Washington's shipping officials asked John E. Cushing, president of American-Hawaiian Steamship Co., to transfer from the national capital to San Francisco to direct from this port a speed-up of a merchant marine effort and straighten out tangles that were interfering with the delivery of vital supplies to the armed forces in the Southwest Pacific.

He came back here on May 1, after being almost constantly in Washington since the outbreak of the war as assistant deputy administrator for the War Shipping Administration.

He will have capable aid from Frazer A. Bailey, vice president of Matson who is now in the South Pacific, and from Royal S. Wintemute, who will be located somewhere in the Antipodes in an important WSA post.

A. R. Linter will handle the North Pacific operations under Mr. Cushing. Edward H. Harms, formerly in charge of operations for McCormick Steamship, will be in charge of the Los Angeles district. He resigned a commander's post in the Navy to take the new job. George Powell will handle the Columbia River district. E. J. Bradley continues in San Francisco, and W. E. Brown, formerly with the Alaska Steamship Company, in Seattle.

Mr. Cushing works directly with Lewis W. Douglas, deputy administrator, who serves directly under Admiral E. O. S. Land.

Commander Henry E. Rossell, USNR., is the new president and general manager of the Cramp Shipbuilding Co., Philadelphia. He took the place of Rear Admiral William G. Du Bose, who assumed the post of chairman of the board of directors.

Ben K. Lockett, known up and down the Pacific as the "Iron Fireman," and formerly chief engineer with the Grace Line, is now superintendent for a New York repair shop.

Former San Franciscans well known in the marine business now associated with the Grace Line under Vice President Fred M. Rohrer in New Orleans include William J. Sykes, marine superintendent; George Sargent, in charge of claims; and Max Burian, who served as chief steward on various transpacific liners with the Pacific Mail in charge of the port steward's department.

Merrill Johnson, port engineer for Grace Line in New York, ill for three months and recuperating on a farm he recently bought in Massachusetts, has returned to his post. He was formerly in San Francisco in charge of marine activities for the old Panama Mail, and before that sailed as chief engineer on the liner Venezuela.

Allan McCullough, well known chief engineer on oil tankers, who left the sea and became associated with the Maritime Commission as inspector attached to the Richmond Shipbuilding Company, has returned to duty after a two month's illness.

William Runyon, assistant to John W. Chapman, vice president of Grace Line in New York, who was freight agent, died suddenly on April 3. He served at one time with the Luckenbach Steamship interests. He was widely known in Atlantic shipping circles as well as having a large Pacific Coast marine acquaintance.

Captain Axel W. Pearson, who served the United States Government for four months handling lend-lease shipments at the Russian port of Murmansk and underwent 168 German air attacks, is now captain of the Port of Los Angeles.

James Sinclair, who started his shipping career in 1919 out of the port of San Francisco as a supercargo on the Pacific Mail freighter Archer, running transpacific, is now general manager for the Luckenbach Steamship Company, New York. He was for sixteen years chairman of the Atlantic Associated Freight Conference, and prior to that eight years in the service of the U. S. Shipping Board's Emergency Fleet Corporation. He also served as supply officer on the U. S. Great Northern, the present H. F. Alexander.

New Appointment

Arthur M. Swigert has just been appointed to the important post of Works Manager for the Ingalls Shipbuilding Corporation at Pascagoula, Mississippi, where his job is one of coordination among all the different departments to see that each has the proper materials, tools and man power, and uses them to the best advantage. He initiates and encourages others to initiate short-cuts to reduce the time ships must spend on the building ways and at the outfitting docks.

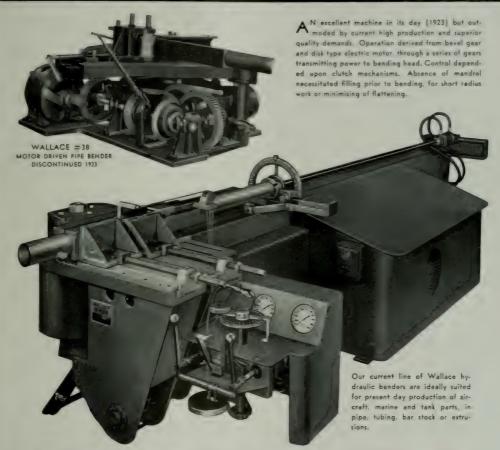
Until going with the shipyard, Mr. Swigert was master mechanic for the Detroit (Chrysler) Tank Arsenal, and prior to that served in practically every department in that company's automobile plants. During his connection with Chrysler, he was trained in the methods that the automobile industry has found so highly successful, production of component parts and subassemblies to such a degree of accuracy that the final assembly requires a fraction of the time compared with slower hand-fitted methods. This knowledge he is now applying to producing ships as perfect as possible and as quickly as they can be constructed.

ARTHUR M. SWIGERT



MAY - 1943

WALLACE Better Bends



*HE #550 series rotary type machine is the only machine with full-automatic, twolever control. Any bend up to 180 degrees may be instantly selected by an automatic pre-selector. Exact duplication assured. Hydraulic clamp prevents slippage and hydraulic operation with full-automatic control to priority regulations E-1-b.

definitely provides precision setting of the mandrel for each bend. Available in eight sizes for work up to 65%" O.D. Other fullautomatic hydraulic machines up to 16" pipe size. Expanded manufacturing facilities enable us to offer excellent deliveries, subject

Wallace benders lead in 1923 and continue to lead in 1943.

WALLACE SUPPLIES MFG. CO.

BENDING SPECIALISTS SINCE 1900 1304 DIVERSEY PARKWAY, CHICAGO, ILL.



PLANT SUPERINTENDENT

Werner Keller, who has just been named plant superintendent of the Todd Hoboken Dry Docks, Inc., a unit of the Todd Shipyards Corporation.

Appointments

Warman Steel Casting Co., Los Angeles, California, manufacturers of electric steel castings, have just announced the following appointments:

M. W. Cardwell has been appointed comptroller; W. C. Burger, sales manager; E. B. Westall, plant metallurgist; and W. B. McCartney, Jr., production engineer. William P. McGervey, Jr., vice president of the organization, made the announcement.

Returns to the Sea

Captain Chester W. Gilbert, veteran in point of service with the old Pacific Mail Steamship Company, where he started as a cadet; then with the Panama Mail Line up the ladder until he was appointed and served as master of the liner Venezuela, running intercoastal; later for a time on the Grace Line's Santa Paula, followed by a short period as port captain in San Francisco, and who retired from the sea in 1935 to a Sebastopol ranch, has answered the call to return to a ship's deck. He is master of the new steamer John S. Pillsbury.

George Eggers is now marine superintendent for the War Shipping Administration for the Pacific Coast, with headquarters in San Francisco. He is handling activities to do with the assignment of Liberty type ships to the various steamship lines running out of this port.

He has been with the Maritime Commission since before the start of the world war as aide to Edward C. Mausshardt. His new position gives the War Shipping Administration one of the country's outstanding operating managers.

Mr. Eggers after the war served with the old Pacific Mail Steamship, but his earliest training was with W. R. Grace & Co., serving this concern in its principal ports throughout the world. He was also manager for the States Steamship Company when this concern started operations in Portland.

Walter Fletcher, manager of the St. Francis Yacht Club, is recovering from dangerous burns received when a heater exploded during an examination at the clubhouse.

Captain J. L. Beebee, in charge of the U. S. Maritime Training School at Catalina Island, is transferred in charge of the New Orleans, La, training academy. Captain Beebee is on leave for the duration from the New York steamship service of the Grace Line.

Victor H. Pinckney has been appointed a member of the War Shipping Administration offices in San Francisco. He was formerly president of the South African Dispatch Line.

Vincent Braga, who was passenger manager for the old Toyo Kisen Kaisya, subsequently taken over by the N. Y. K. Line, is now in the San Francisco offices of the British Ministry of Shipping.

Commander Ralph Sheaf, in charge of the U. S. Maritime Training Cadet School at Coyote Point, San Mateo, leaves soon for an inspection tour of academies on the Atlantic, Great Lakes and Gulf. San Mateo ranks high among the Government training stations.

Captain Curt Zastrow, who brought the liner Santa Rosa out on her maiden voyage and continued in command until three months ago, has retired temporarily from the sea because of ill health, and is back from New York and again living in his old home at Chicken Point, Marin County.

His last voyage on the Atlantic was described as one of the most trying in his sea career, a record that stands high for more than a quarter of a century. His vessel was battered and damaged in one of the worst gales encountered in a decade. Captain Zastrow was on the bridge for forty-eight hours. Lifeboats were carried away, ports smashed and other damage sustained, but the gallant Santa Rosa was brought safely to port.

Curtis C. Brune is on leave from Matson Navigation to be field representative in Chicago for the WSA's recruitment and manning organization. Hugh King, formerly with the Luckenbach Line, formerly in this post, has been promoted regional manager for the Great Lakes district.

Propeller Club Meeting

The April meeting of the Propeller Club of the United States, Port of Los Angeles-Loug Beach, was held at the Biltmore Hotel, Los Angeles, in Conference Room No. 1 at 12 noon, on Wednesday, April 28.

The principal speaker at the meeting was Admiral Albert Ware Marshall, U.S.N. (Ret.), who spoke on general conditions pertaining to the present war.

Admiral Marshall is the first Honorary Member, and some very pertinent and practical information in respect to this world-wide struggle in which the United States is now involved was presented.

FOR HEROISM

For heroism in saving the life of a fellow seaman when their ship was torpedoed last July in the Caribbean, Frank Amestica of New York City was awarded a gold medal, a gift from D. Stewart Iglehart, president of W. R. Grace & Co. Vice President F. M. Rohrer, now in charge of the Grace Line, New Orleans, is shown making the presentation.



The House and Senate have approved a bill and others, the Was Shapping Administration to award meda's and other decerations at home to seamen who hand's ships carring vital supplies through submarine retested waters.

J. H. Hurd, who has been general agent for Matson in Los Angeles, is now stationed in San Francisco, and his place in the South is now in charge or H. E. Pippin, Mr. Hurd has found Alexander & Baldwin.

Mrs. John W. Greenslade, wife of Admiral Greenslade, Commander, the Western Sea Frontier and commandant of the Twelfth Naval District, passed away March 27 She was the sister of Hugh Gallacher, vice president. Matson Navigation Company Burial was in Arlington National Cemetery.

The passing of W. H. Avery in San Francisco last month brought memories to veteran shipping men only, but Mr. Avery was one of the men who aided in placing the old Japanese Toyo Kisen Kaisha in a position of becoming one of the strongest steamship concerns in the world. He was a purser when he became associated with the company, but shortly after joining it he advanced rapidly, and when he retired about 20 years ago he was their general manager.

Death closed more than a half century's devotion to the building of the American merchant marine with the passing on April 26 of Commodore Edgar F, Luckenbach, 80 years of age, at his Sands Point, Long Island home. Commodore Luckenbach was president of the steamship line which bears his name. He is survived by two sons, Edgar, Jr., and Louis, and a daughter Andrea.

A heart attack induced by the strain of war duties caused the death last month of George J. Yater, chairman of the Pacific Coast European Conference and a member of the executive board of the British Ministry of War Transport in San Francisco.

He was one of the best-known marine leaders on the Pacific Coast. He had until his unexpected death coordinated cargoes and shipping for the British Shipping Ministry on the West Coast. Mr. Yater was at one time connected with the San Francisco head-quarters of Norton, Lilly & Co. He is survived by his widow and a daughter, Mrs. John J. Sullivan.



Todd Erie Basin

Todd Eric Basin Dry Docks Inc., Brooklyn unit of the Todd Shipyards Corporation, has been awarded the United States Maritime Commission "M" flag in "recognition of outstanding achievement in ship repairing and meeting required completion dates," it was announced on March 28 by John D. Reilly, president of the corporation.

Announcement of the award, which entitles the yard to fly the "Victory Fleet Flag" and all employees to wear the Maritime merit badges, was contained in a telegram from Adm. H. L. Vickery, Chairman of the U. S. Maritime Commission Board of Awards, to F. D. Hesley, president of the ship repair yard.

Until that time, no ship repair yard had been awarded the "M" for its performance.

Page 105

Keep Posted!

NEW EQUIPMENT AND MACHINERY FOR YARD, SHIP AND DOCK

Laminated Ship Knees Speed Production

One of the latest adaptations of the glued-laminated field is the new glued-laminated ship knee. Now being furnished in large quantities, the knee is proving to be a real boon to wood hull and barge builders, for through its use a serious "bottle-neck" has been averted.

In former days, when all ships were built of wood, a thriving business was done by stump farmers in providing ship knees for the industry. In the process of clearing cut over land, the stump farmers were careful to save the roots of the large tree stumps. From these roots and crooks of the stump they laboriously cut sections with various degrees of

bend in them, and these they sold to brokers, who maintained complete assortments for resale to the shipbuilders. Large stocks of the knees were thus available in the various sizes and shapes needed.

The present-day upsurge in the use of wood for hull and barge construction calling for ship knees in great quantities found no such stores of natural knees available. Thus the announcement by Timber Structures, Inc., that through recent research in their glue laminating plant, a new knee had been developed which could be produced in carload lots, proved to be a most welcome and timely answer to a very real problem.

The new knee is built up of successive laminations of selected Douglas fir bonded together with a special waterproof urea resin glue. This gluing operation, when performed under properly controlled conditions, produces a joint as strong as the wood itself. Each lamination of the knee is laid at cross grain to the preced-



Above: The ship knees are produced to specification on any size of design required.

Below: Cross section of typical wooden ship, showing timber structures which can be fabricated by the glued laminated method.

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SHIP KNEE DECK BEAM	
GLUED-LAMINATED FRAMING	
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Ture TURNBUCKLES with	Write or wire for additional information and data

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Tens of thousands of Danforth Anchors in all sizes are in service on more than 60 types of craft. Where these anchors have been specified in sizes from 750 lbs. and up, it has generally been conservative policy—in view of test data—to use Danforths of approximately one-half the weight of regular stockless anchors. This saving in steel is vital and the saving in weight makes Danforths easy-to-handle with lighter gear.

Write for complete data prepared for Naval Architects and Shipbuilders



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The U. S. Army required several 20,000 lb. anchors for a difficult installation, but available handling gear was not suitable for stock-less anchors over 10,000 lbs. This problem was solved by using 11,000 lb. Danforths which have been giving satisfactory service for three years. These Danforths were proof tested at 250,000 lbs. although 104,000 lbs. is the regular proof test.



R. S. DANFORTH • 2121 Aliston Way • Berkeley, Calif.

ing laminae, thus producing a member of tremendous strength and at the same time reducing the possibility of splitting or checking to the very minimum. Being constructed of kiln-dried lumber, the member is not subject to shrinking or warping.

The time-saving qualities of the glued-laminated knees arise from the fact that they are delivered ready to install. Being sized in exact accordance to the boat or barge builders' specifications, costly, time-consuming hand-fitting is eliminated. Still another time-saving element is apparent in that the supply is almost unlimited and deliveries may be had without delay.

The usual problems of size and shape are eliminated by the glued-laminated procedure, for the knees are built in any desired dimensions. Each type of knee is engineered to meet the conditions of its usage through varying the number, size and placement of the laminations to meet the shape and stress requirements of the particular member being produced.

Timber Structures, Inc., the Portland, Oregon, firm who introduced the new ship knee to the marine industry, has long been recognized by building contractors as a leader in the prefabrication field. It is this firm which now employs glued - laminated truss chords in the production of huge roof trusses over 200 feet in length. The engineering and production methods used in manufacturing the ship knees are an adaptation of the methods used by them in producing prefabricated structural members for the heavy building field.

Many other formerly "hard-toget items" are now available to wood hull and barge builders through glued-laminated construction methods. Among these are deck beams and built up keelsons, with or without camber; rake members of many types; deck planking, prefabricated in sections of any practical thickness or size; and even monolithic gunwales. The many advantages of glued-laminated construction as applied to the production of ship knees apply also to these members, eliminating most problems of size, shape, strength, and, above all, availability.

Judging from the tremendous strides being made in this comparatively new field, it is not at all improbable that the production of glue-laminated wood hull or barge frameworks, prefabricated and delivered to the boat-builder ready for assembly, will be a common practice in the near future, just as the complete framing for heavy buildings is now delivered to contractors in all parts of the country.

Motor-Operated Horns

Among the Navy Interior Communications devices now being manufactured by the Benjamin Electric Mfg. Co., Des Plaines, Illinois, are motor driven horns conforming with U. S. Navy specifications 17-S-11.

These Navy Types H-8 and H-9 horns are designed to equal or better Bureau of Ships specifications for such equipment, including Specifications for decibel output, power consumption,



shock test, salt spray test, dielectric test, insulation resistance, temperature rise and immersion in sea water.

The horns are driven by a series motor, specially designed for this service. The sound is produced by a cam on the end of the armature shaft striking an anvil fastened to the diaphragm. The sound response is immediate when the motor is energized, and stops instantly when the motor is de-energized.

New Explosion-Proof Motors

A new line of vertical hollow shaft explosion-proof motors is offered by Fairbanks, Morse & Co. for operation in Underwriters' Class I Group D hazardous gas locations. These motors



Fairbanks Morse vertical hollow shaft explosion-proof motor.

are designed primarily for pumps handling large quantities of volatile materials, such as high-octane aviation gasolina

Special equipment is required for the efficient handling of gasoline in fueling planes at each of our numerous airfields, as well as for transferring gasoline from tankers to storage locations at our various outposts throughout the world. Numerous applications are arising requiring motors designed to prevent explosions and fires, and these horizontal and vertical explosion-proof motors reduce this hazard.

A New Varnish Stripper

A stripping medium, designated as Sterling S-159 Stripper, which provides fast and easy removal of insulating varnish from portions of the electrical equipment where varnish is not desired, has been developed by The Sterling Varnish Company, Haysville, Pa.

Time of complete finishing of electrical units with insulating varnish has been measurably reduced with the introduction of this stripper. It is a blue viscous liquid that is brushed on machined surfaces or other metal parts prior to the actual application of the varnish to the piece as a whole. It dries in two or three minutes, after which the varnish is applied in the usual manner, dipping, spraying or

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Globe, Angle	aı	nd	1	Cr	05	5	٧	ah	/e	S		۰	1½" to 8"
Hose Valves .												٠	1½" to 6"
Check Valves											۰	۰	2" to 10"
Gate Valves .													2" to 10"





brushing, and is dried at normal or elevated temperatures.

Any varnish which has adhered to the portions previously treated with the stripper can be easily and rapidly removed with a wood or bakelite knife without marring or otherwise disturbing exact and close tolerances.

The Streamlined Scuttle Butt

Three sizes of electric water coolers specially designed for shipboard use are now in production by Cordley & Hayes, New York. These self-contained water coolers, built in 5-, 10- and 20-gallon capacities, are being supplied to the Navy on Bureau of Ships contract. They are also being supplied to the Maritime Commission through shipbuilders.

The motor is invulnerable to overheating and overloading. Refrigerated water can be drawn at the rate of over 300 per cent of minimum water capacity without injury to mechanism. It exceeds Navy 300 per cent overload requirement.

Removable cabinet panels permit refinishing or replacement in event of damage without interfering with operation of the cooler. The cabinet is ratproof in accordance with Navy specifications.

Specifications are available by writing the manufacturer through this magazine.

ELECTRIC WATER COOLER



Page 110

Dura-Grom, A New Lifetime Grommet

Arens new Dura-Grom affords a fume- and water-tight support for air, oil and hydraulic lines, electrical cables, flexible remote control casings, etc., through a firewall or bulkhead. Eliminates many quick disconnect and firewall fittings, Dura-Grom slips over a line, cable or tube and fits snugly against wall.

Dura-Grom consists of only two parts; an oil-resisting synthetic rubber



disk, and a cadmium plated steel cup retainer for securely attaching grommet to wall.

Packing Member is an oil-resisting synthetic rubber block which affords many times the bearing surface characteristic of the old-fashioned grommet.

Retainer Cup has an opening large enough to slip over an assembled line or tube, including end fittings. Eliminates disassembly of fittings during installation. Retainer is a steel stamping, cadmium plated to resist corrosion.

Multiple lines can be supported by a single Dura-Grom. Individual openings are provided in rubber disk for each line, quickly assembled or removed. Bolts or screws hold Dura-Grom snugly against supporting wall.

In addition to the fume- and watertight features, Dura-Grom saves time
on installation. A complete tube essembly may be slipped through fire
wall and Dura-Grom retainer and permanently fastened at the ends. The
split rubber disk is then easily installed
by slipping it over the line, sliding the
retainer in place and bolting it to the
fire wall, completing the installation.
This eliminates the necessity of many
quick disconnect or fire wall fittings.

Dura-Grom is manufactured by Arens Controls, for over twenty years manufacturers of quality precision remote control equipment.

New Type Turnbuckles

Among the marine specialties manufactured by the Dix Manufacturing Co., Los Angeles, Calif., is a new type turnbuckle designed especially to save time and increase its load strength.

according to R. W. Adair, head of the company.

The turnbuckles are constructed of such high-quality alloys as to provide the unusual safety factor of "Three." Another unusual feature is that they do not have and do not require left-hand threads. They are made for all sizes of cables and for various purposes and to meet special requirements.

Reinforced V-Belts

Production of wire reinforced Vbelts is announced by The B. F. Goodrich Company, which first built belts of this type in 1938.

Two types are being built, a cable

MARINE CABLE

FLEXIBLE • WATER-PROOF •

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IDEAL for use on ships and docks. The water repellent gaskets between armor and conductors prevent deformation of the armor and prevent creeping and opening up of armor under severe vibration. The bond is so tight that corrosive liquids, gases and moisture cannot seep into junction boxes. The armor is ideal for synthetic and asbestos covered wires. Spiralok conforms to Shipboard Cable Standards and meets requirements of Marine Inspection and Navigation.

Spiralok

Look for "Spiralok" stamped on the armor

Write for quotations for either bronze or steel armor Spiralok.

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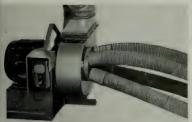
Production is stepped up—men can work longer and harder—when fresh air is supplied and welding fumes removed.

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Specially designed and built for heavy duty shipyard service—Easily portable—Interchangeable manifold on blower scroll can be connected to pressure or suction side and up to four separate hoses can be used for removal of fumes or supplying of fresh air—Motors are 440 volt, 60 cycle direct connected—Heavy wire guards on inlet and discharge protect wheels.

Shown below is typical hose arrangement for removing fumes from four separate places, and discharging through large diameter fabric duct. An optional arrangement is to remove the hoses and adapter from suction side and directing discharge duct to location in ship to be ventilated—over 1580 c.f.m. of fresh air can be supplied to workers. Discharge direction of blower scroll may be rotated to 3 different positions.

Write for descriptive literature



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Hot off the Press

CATALOGS OF TODAY BECOME TECHNICAL HANDBOOKS OF TOMORROW

Charts for Use of Fire Extinguishers, American-LaFrance-Foamite Corporation, Elmira, N. Y., announces

two new fire extinguisher charts that clearly and concisely tabulate the several types of hand extinguishers and

wheeled engines and their suitability or otherwise as applying to Class "A," "B" and "C" fires.

YOURS FOR THE ASKING!

The manufacturers named in this HOT OFF THE PRESS department will gladly furnish, without obligation to you, copies of the trade literature reviewed in these pages. For quick service, please use this coupon.

PACIFIC MARINE REVIEW

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Send me this Trade Literature as mentioned in your edition:

"The Romance of Piping," a history of the development of piping from the cave man to the present day—from the piping from the Pyramids to the Outer Temple on the Nile, Solomon's Aqueduct, piping in the days of the Greeks and Romans, the fountains of Versailles in 1664, and the Gas Light Era. It is published in the Spring, 1943, issue of Tube Turns' "Sparks," published quarterly by Tube Turns, Louisville, Ky.

Worm Gear Units for 3- and 3½-inch center distances are described in Leaflet E-1219 of De Laval Steam Turbine Co., Trenton, N. J. Gears are supplied for either top or bottom drive, and are primarily intended for operation of low-power machinery.

BUSINESS

ADDRESS



Here you see illustrated a very simple and practical "bench service" that is providing hot coffee, soups and other refreshing "pick-ups" to workers in industrial war plants... an actual photograph taken in a war plant.

TO THE WORKERS

The outlay for equipment is negligible \dots requiring a minimum of critical materials.

The AerVoiD vacuum-insulated carrier makes service to workers near their work easy and simple AND SAVES VALUABLE PRODUCTION MINUTES.

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The International Nickel Co., Inc., New York City, issues a booklet describing four different methods for renewing worn metal parts, such as pump rods and shafts. Illustrated are step-by-step procedures for reconditioning a worn pump shaft.

Reground Ball Bearings: With many industrial and automotive bearing users unable to obtain an adequate supply of new ball bearings for replacement purposes, a new 16-page book just announced by Precision Bearings, Inc., Los Angeles, Calif., will be found of much interest.

Catalog No. 1960, from Link-Belt Speeder Corp., Chicago, covers the company's 2- to 3-yard Speed-o-Matic Series "500" cranes, draglines and shoveis. Eight pages are devoted to dimensions, clearance diagrams, working ranges, lifting capacities and specifications.

A new universal angle drive is announced by Payne Dean & Co., Laconia, N. H., in an 8-page folder just published. This control unit has been developed for more convenient hand control of valves and other devices on shipboard and in industry. Flexible shaft mounting contributes to its adaptability.

Aircraft Screw Products Co., Inc., Long Island City, N. Y., has issued Bulletin No. 237 on "Heli-Coil" spark plug bushings, a 4-page folder illustrated by half tone and line cut.

"Arc Welding Accessories for Women" is a new bulletin (GEA-3295) from General Electric Co., and presents the company's complete line of safety clothing and equipment especially designed for the country's steadily-increasing army of girl welding operators.

"Expansion Bolt and Screw Anchor Dimensional Chart," a reference wall chart 14" x 20", has just been published by The Rawlplug Company, New York City, for users of expansion bolts. It is described in more detail in a broadside offered by the company.

"Maintenance of First Aid Fire-Fighting Equipment," issued by American-LaFrance-Foamite Corp., Elmira, N. Y., is a booklet of six sections, viz., Vaporizing Liquid, Soda Acid, Foam, Anti-Freeze, Carbon-Dioxide Extinguishers, and condensed data as to extinguisher and engine characteristics, methods of operation, etc.

Maintenance Manual on Electric Tools, booklet No. JE199, has just been published by Independent Pneumatic Tool Co., Chicago, Ill. It details how to get maximum service from portable electric tools, and contains instructions on proper operation and care of all types of portable electric tools.

"Marine Gears and Their Maintenance," by C. R. Waller, is being distributed free by the De Laval Steam Turbine Co., Trenton, N. J., of which Mr. Waller is vice president in charge of Engineering. It gives information of use to chief engineers concerning gears used with steam turbines, precautions, care of the oiling system, meaning and causes of gear noises, care of bearings, and alignment of gears.

Model J Single-Range Hand Tachometers—Bulletin No. 7, Herman H. Sticht Co., Inc., New York.

These tachometers are of the centrifugal mechanical type and indicate speeds and changes of speeds of any revolving shaft or surface continuously and instantaneously. They are simple, accurate, and reliable instruments and are primarily designed for heavy-duty service.

The tachometers have a large open 4" dial with easy-to-read white figures on black background, and come with a complete set of accessories and case. Six different ranges are available for speeds from 100 to 10,000 rpm.

A Digest of 36: How shipbuilding yards, drydocks and repair basins are expediting work, conserving man power and increasing efficiency on 36 essential ship construction, maintenance and repair jobs is the subject of a new, 12-page digest just issued by Oakite Products, Inc., New York.

It describes faster, easier ways of handling such production work as removing identification paint marks from steel plates and parts before pickling and neutralizing, degreasing steel parts and castings before welding, safely preparing aluminum for resistance spot-welding and painting, cleaning oxygen and air lines, cleaning boilers of new ships, and many other jobs relating to ship construction.

A section of the Digest deals with such maintenance and repair operations as: safely de-scaling and cleaning diesel cooling systems, surface condensers, fuel oil heaters, lube oil coolers, ammonia condensers and other types of heat exchange equipment; stripping paint from steel panel plates and deep tanks before repainting and reconditioning; removing varnish from armature coils, and cleaning and stripping motor housings before repair.

(Page 126, please)

Hesse-Ersted Receives Award

At impressive ceremonies on March. 17. employees of Hesse Eisted from Works or Portland, Oregon, were presented with official ment bad, es of the United States Maritime Commission and the Navy at the same time that the company was awarded the "M" Burgee and Victory Fleet Plag. The awards were made in the plant, speak ers including Mayor Earl Riley; Richard W. Owens, industrial advisor of the Commission; Kenneth B Hall, president of the company; Ernest Farnand, vice president; Lawrence Frey, superintendent; and Harry Walsh, an employee, George R. Castner, assist ant treasurer, was master of ceremonies

Views at presentation of the Maritime Commission's "M" Burgee and Victory Fleet Flag to Messe-Ersted Iron Works. The top photo shows, from left to right: Harry Walsh, employee of the company; Kenneth B. Hall, president; Richard W. Owens, Industrial advisor, U. S. Maritime Commission; Lawrence Frey, plant superintendent; Walter Linkon, employee; and George Castner, assistant treasurer. In the second picture, President Hall addresses the gathering through a microphone. The third photo shows presentation of "E" lapel pins. Part of the gathering is shown in the last picture.

Mr. Owens praised management and employees for their efforts in repairing and placing into service machinery left over from the first world war, and for producing a large number of anthor windlasses and cargo winches for Liberty ships. President Hall urged wives of workmen to cooperate in helping to reduce absenteeism and increase man-hours in the plant.

Miss Jean Hall, daughter of President Hall, and Carol Frey, daughter of the superintendent, assisted with raising of the burgee and flag.

Morey Machinery Wins Award

Presentation of the Army-Navy "E" Award was made to the employees and management of the Morey Machinery Co., Inc., Astoria, New York, by Lieutenant Colonel Charles W. Kerwood, Chief Air Corps Liaison Officer, United States Army, and Lieutenant John D. Lodge, United States Navy, in ceremonies at the Astoria plant on Friday, April 16, with the Hon. Matthew J. Merritt, Congressman-at-Large from New York State, as the guest of honor, and the Hon. Joseph D. Nunan, Jr., Collector of Internal Revenue, Brooklyn, N. Y., as the master of ceremonies.





Published monthly with alternate listings of yards in two sections; Pacific Coast, one month; Atlantic, Lakes and Rivers, the following. Send information to Directory Editor, 500 Sansome Street, Sun Francisco.

American Shipyards

DIRECTORY of EXECUTIVES

Pacific Coast

AETNA CONSTRUCTION COMPANY Los Angeles, California

ALBINA ENG. & MACHINE WORKS, Inc.

2103 N. Clark Ave. Portland, Oregon

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AMERICAN PIPE & CONSTRUCTION Lido Canal Newport Beach, Calif.

Superintendent: H. C. Clark.

ANACORTES SHIPBUILDERS P. O. Box 111 Anacortes, Washington

ANDERSON & CHRISTOFANI Innes & Griffiths Sts. San Francisco, Calif.

ASSOCIATED SHIPBUILDERS Plant No. 1, Harbor Island Plant 2727-16th Ave. S. W. Seattle, Wash.

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Procurement Manager: R. K. Jaggar.
Purchasing Agent: E. B. Devener.
Plant No. 2, Lake Union Plant

1515 Fairview No. Seattle, Wash. General Manager: G. H. Stebbins.

Asst. General Manager: H. W. Blaney. Chief Engineer: B. R. Richards. Purchasing Agent: A. T. Harris.

ASTORIA MARINE CONSTRUCTION CO. Astoria, Ore.

President: Joseph M. Dyer, Vice President and Manager: G. T. McClean. Treasurer: Geo. C. Sheahan.

Naval Architect: Joseph M. Dyer, Chief Engineer: W. H. Dole, Purchasing Agent: Richard Schroeder.

BALLARD MARINE RAILWAY CO.

5351-24th, N. W.
Seattle, Washington
President: W. G. Fryberg.
Vice President: E. C. Smith. Manager: H. F. Fryberg.

BABARE MFG. CO. Tacoma, Washington

BARBEE MARINE YARDS, INC. Foot of 26th Ave. N. W. Seattle, Washington Plant No. 2 Bryn Mawr, Wash.

BARR LUMBER COMPANY 1022 East Fourth St. Santa Ana, California President: O. H. Barr.

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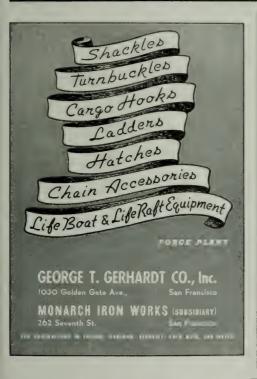


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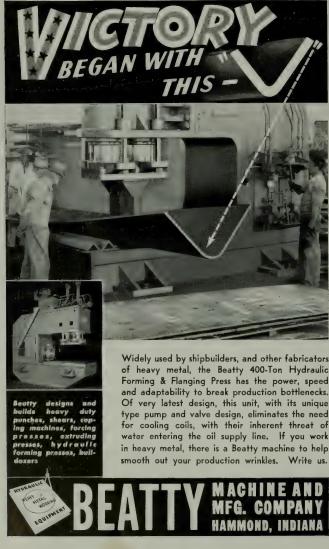
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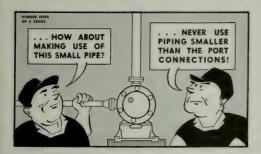
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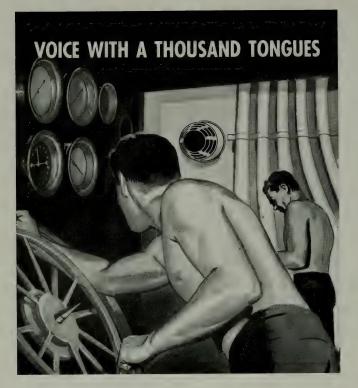
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HOT OFF THE PRESS

(Continued from page 114)

Cochrane Bulletin Publication 4009, now available, is descriptive of proportioning equipment of the double displacement type, which eliminates pumps, and moving parts. This equipment is simple in construction and depends upon the proportioning of one fluid to another by utilization of the pressure loss through the metering element, such as an orifice or Venturi tube.

The apparatus is designed for the incorporation of a pH controller, making the apparatus very accurate and sensitive. With this addition, the pH value can be maintained in the water treated at a constant value irrespective of the changes in rates of flow and changes in the pH value of the water to be treated.

The apparatus is very readily adapted to the continuous proportioning of acid solutions to feed water, such as sulphuric acid for the reduction of alkalinity and pH value, the addition of coagulants for clarification purposes for the blending or introduction of one fluid to another and can be applied to chemical processes and other industrial requirements, as well as for boiler feed water service.

Birdseye Lighting Handbook, a new Government manual and price schedule on Birdseye lamps and lighting, has just been issued by the Birdseye Electric Corporation, for distribution to Government procurement agencies, purchasing personnel, and Government lighting engineers. Designed to present the essential facts of productive wartime lighting, the handbook analyzes the five main types of lighting requirements, and the efficiency and economy with which the five Birdseve types of reflector lamps meet modern problems of more productive lighting without separate fixtures or added line load.

In addition to complete information on those Birdseye lamps standardized for Government use on the 1943 contract, the schedule describes two lamp products to fill specific wartime problems—the Superlite light-conditioning bulb for use without fixtures, globes, or shades, where such equipment cannot be secured, and the Birdseye infrared heat lamps for speeding up wartime production in industrial baking, drying and dehydrating.

Government procurement agencies, purchasing personnel and Government lighting engineers can secure their copies by writing Birdseye Electric Corporation, Brooklyn, N. Y.

(Page 132, please)

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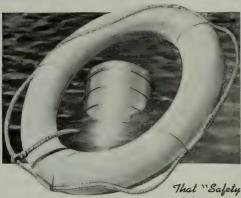
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HOT OFF THE PRESS

(Continued from page 126)

Veelos at Work; a new, complete catalogue on Veelos Adjustable V-Belting, the link V-belt which is sold in rolls. It is complete, comprehensive and instructive. It shows in detail the sequence of operations to take the belt apart at any point with an ordinary screw driver, and the necessary steps to couple the belt together again without the use of tools.

The catalogue also illustrates a number of typical applications, gives complete engineering data and sample calculations for determining the necessary size of a drive. In a Veelos V-Belt length table is listed the proper length of Veelos V-Belt to use according to the standard formula.

complete and comprehensive book on Veelos Adjustable V-Belting, and is a real contribution to solving the problems of V-belt users.

This is the most generally useful,

A "Blue Print" to Flexible Metal Hose for Ships: Chicago Metal Hose Corporation's new "Shipbuilding Series M-45" is just off the press. It contains twelve pages of up-to-date engineering data, illustrations and information on various types of Rex flexible metal hose, couplings, flanges, specifications and recommendations on various marine applications, such as: starting air lines; air intake lines; lubricating oil lines; fuel lines; pressure gage connectors; high pressure hose; exhaust lines; water lines; ventilating tubing; voice tubing.

Engineers who are concerned with problems involving flexible connections will find this well-illustrated book extremely valuable. Published by Chicago Metal Hose Corporation, Maywood, Illinois.

How Are Caterpillar Diesels Serving and Saving? is answered in an eight-page booklet just published by Caterpillar Tractor Co., Peoria, Illinois.

Interesting sketches and photographs are used to illustrate the series of questions and answers.

Factors Affecting Increased Welding Production, a new 42-page booklet, announced by The Lincoln Electric Company, Cleveland, Ohio, world's largest manufacturer of arc welding equipment.

The contents of the booklet is divided into 15 different sections, each of which contains up-to-date information concerning specific phases of arc welding, such as "Factors Affecting Speed and Cost," "Justifying the Amount of Equipment for Fit-Up," "Where, When and How to Weave," etc.

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This galley is a typical example of the use of Alundum Tile. It will pay you, too, to prevent costly slipping accidents.

There is also Alundum Ceramic Mosaic Tile for showers and lavatories and Alundum Aggregate for making terrazzo floors non-slip. Catalogs on request.

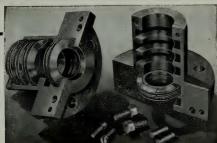
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New 1500 - Ton Railway Drydock

Scuttled by its German crew and later salvaged by the Venezuelan Arsenal Naval Base, the S.S. Durazzo, as shown in the accompanying photographs is being drydocked as the initial capacity load on the newly completed 1500-ton railway drydock at Puerto Cabello.

Pursuant to its plan to modernize the Puerto Cabello Naval Base, the Venezuelan Ministry of Public Works in 1940, commissioned the Crandall Dry Dock Engineers, Cambridge, Massachusetts, to design a 1500-ton railway drydock alongside the 500-ton dock completed late that year by the same firm.

The principal dimensions of this new 1500-ton railway drydock are:

Length over keel blocks	229.7'
Length overall	249.6'
Width over cross beams	49.9'
Width clear	41.7′
Length of track	560.9'
Depth of water over keel blocks, forward	11.0′
Depth of water over keel blocks, aft	15.9'

The cradle is a structural steel frame with deck and docking platform of wood plank. Two longitudinal girders and trusses, to the lower faces of which are riveted the flat rail plates of high carbon steel, have their upper faces attached to wide flanged transverse beams which support the keel blocks, the bilge blocks and the deck. This deck covers the entire width of the



Right: 1500-ton railway drydock.

cradle and extends beyond the after keel block to give ready access to propellers and rudders. On each side of the cradle is a docking platform supported by steel uprights fastened to the ends of the transverse beams, from which the bilge blocks are operated by means of hand winches.

The two-way type tracks are constructed on an arc of a circle in order to procure the specified depth of water over the keel blocks within the length available. Above low water, they are constructed of reinforced concrete while the submerged portion is of wood, protected against marine borers. The entire track is supported by a foundation of long timber piling driven through silt and soft clay to a firm bearing in dense sand and cut off by divers along the line of desired curvature. The wood track, constructed as a unit ashore, was floated over the piles, sunk into place, carefully aligned, and fastened to the piles.

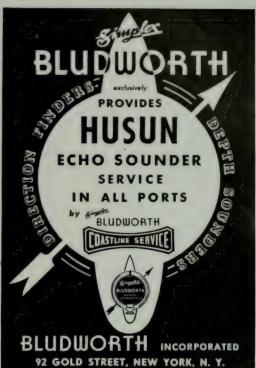
Extending 131.2 feet inshore of the main track is a lighter wood track designed to support the cradle only. On this the cradle may be hauled out clear of the water for maintenance work.

The cradle moves over the track on free rollers of hard alloy steel, which operate between the flat steel rail plates on the cradle runners and similar plates fastened to the upper surface of the track. It is operated by two alloy steel hauling chains arranged as an endless system driven by an electric hauling machine of sufficient power to haul out a capacity load in 20 minutes.

SAFETY AS PRODUCTION EXPEDITER

Safety for its war workers—that is an integral aspect of the production program at the marine machinery plant of the Webster-Brinkley Co., Seattle, Wash. This picture shows one of the battery of employee fire squads getting into action during a fire drill. Air raid drills are also held frequently.







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Pacific IMPRINE REVIEW



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Pacific IMARINE REVIEW

Post-War Shipping Policy

by Rear Admiral Emory S. Land

I would make the following suggestions with regard to American policy covering the United States Merchant Marine, with primary reference to our after-the-war position:

- (a) Private ownership, private operation and private construction.
- (b) Ship American: Travel American.
- (c) Our goal is to ship a liberal percentage of our overseas traffic in American bottoms.
- (d) Set up proper routes, lines and services with a minimum of American competition. Foreign flags will furnish all competition necessary.
- (e) Seriously study indirect lines as other leading maritime nations have done. We have every right to compete on the indirect lines.
- (f) Thoroughly consider and adopt tramp shipping.
- (g) Maintain for the duration our present policy of holding title to newships.

In order to plan properly for the after-the-war period, consideration must be given to the probable fleet under American flag that will be mexistence at the end of the war.

We should definitely earmark for United States commerce, under United States flag, a modern fleet of from 15 to 20 million deadweight tons. As a nation of 135 million people, we are entitled to that tonnage. As the greatest shipbuilding nation in the

world, we are entitled to have it as modern and up to date as the exigences of the war permit.

We will have such a fleet made up of the Maritime Commission's standard long-range types of vessels, plus the "Victory" ships now in process of design and construction. We will have the skilled and trained personnel, both licensed and unlicensed, to man and operate such a fleet. As a matter of actual fact, we will have far more, but it is not only proper but in my judgment essential that we carmark such a fleet for the United States merchant marine.

In order to give reasonable consideration to the overall shipping industry of the United States, we should so set our sights as to hold this fleet of about 20 million deadweight tons, but, in addition, even though not necessary from a world economic point of view, it is very desirable that we lay out our plans so that our best shipyards, properly distributed throughout the United States, should be able to proceed with a nucleus of construction of new ships even though we may build up a reserve. While we have no excess today of shipbuilding capacity for war purposes, it is unthinkable to believe that the day the war ends all ship construction in the United States will stop. Let us plan so that we can modify this ship construction to permit a permanent shipbuilding

It appears probable that we will have an excess of ships at the end of



the war, and we should so plan as to retain not only a proper merchant fleet but also a reasonable reserve of merchant ships.

War causes sacrifice on the part of every citizen in the United States, from the most menial worker at home to the man who lays down his life for his country in the war zone. It must be evident to each of us that peace also will mean sacrifice for every individual in the United States, even though the sacrifice is quite different from that which obtains in war. There is no lack of patriotism in this grand country of ours from a wartime point of view; there should be no lack of intelligent and economic patriotism from a peace-time point of view.

A concluding thought may well be that a groundwork has been laid on which we may build for the greatest maritime era in the history of our nation. That will take the cooperation of the Propeller Clubs, the shipping industry, the Maritime Commission, an dthe American people.

The time has come for us to give that matter serious consideration.

(Extract from address delivered at San Francisco Maritime Day, May 22, 1943.)



HE Atlas Imperial Diesel Engine Co. of Oakland, recently the recipient of the Army and Navy "E" pennant as a reward for their production efforts in the current war program, have made many interesting installations during the years of their existence. Just recently the company has received the acceptance of an installation which, perhaps, from the background and color surrounding it, will prove to be one of the most interesting.

This consists in the Atlas Imperial installation in the Chilean Naval Vessel Lautaro. The Lautaro is a four-masted barkentine of 3185 gross tons, and was formerly the German ship Priwall. She is a steel vessel, and was built by the well-known shipyard of



The Barkentine Lautaro

Messrs. Blohm & Voss, at Hamburg, in 1919. Originally she belonged to the Laeisz Line of Hamburg, who operated what was internationally known as the line of the "Flying P's." They were given this nickname because all their ships had a name beginning with the letter "P" and, secondly, because the ships were extremely fast. It is interesting to note in this connection that on the voyage from Chile to San Francisco, under sail alone, the Lautaro at times logged 15 knots. This is quite remarkable when it is considered that the ship is 325 feet in length by 47 feet beam, and of the tonnage as previously

The original owners of the vessel operated her in the nitrate trade from Chile to continental ports of Europe, and when the Nazis precipitated the present world conflict, unfortunately for them, but to the advantage of the United Nations, the ship was laying in a Chilean port. Subsequently it came into the possession of the Chilean Admiralty, who decided to convert the vessel into a training ship for their Naval Academy graduates.

The Chilean Navy, we might remark, is considered the outstanding Navy in all South America. While

in the number of vessels it is exceeded by another South American country, nevertheless the type of ships that it possesses, the complete and outstanding training and efficiency of the crews and, above all, the careful education and training of Chilean officers, gives it first rank in the eyes of those who know. This, of course, is simply a reflection, among other things, of the splendid work accomplished by British naval missions to Chile during the past several years.

It is also of interest to know that the Chilean Admiralty very definitely considers that a man is not a good sailor until he has had experience "before the mast," as from duties on a sailing vessel the young midshipman becomes wise in the way of the sea, develops his "weather eye" and receives benefits of experience which could not otherwise be acquired and which are bound to enhance his seaman-like qualities when finally assigned to a power vessel.

Through the U. S. Government, under its "good neighbor" policy, arrangements were made by the U. S. Navy for the purchase of engines to supply power for the vessel, and, accordingly, a contract was entered

PACIFIC MARINE REVIEW

FOUR-MASTER'S POWER PLANT

into between the U.S. Navy and Atlas in the latter part of 1941.

The ship left Chile sometime in March, 1942, and arrived in San Francisco in May, and was taken to the General Engineering & Dry Dock Co in Alameda for the conversion. In command of the ship was Capt Arturo Young-Ward, a distinguished officer in the Chilean service. Capt. Young Ward has hundreds of friends in the U.S., having served some years ago as Chilean Naval Attache at Washington. Formerly in charge of a destroyer flotilla, he was selected by his Admiralty to bring the Lautaro to San Francisco because of his experience with sailing vessels and his thorough knowledge of their peculi-

Captain Young brought with him Lieut. (s.g.) Kenneth Pearson, one of the outstanding engineer officers of the Chilean submarine service.

Propulsion Power

When it is considered that the Lautaro was a merchantman originally, with accommodations for only five officers and thirty men, and that the work on the vessel included the establishment of the proper quarters for twelve officers, 135 sailors, and, in addition, accommodations for thirty-six midshipmen, some idea of the immensity of the work involved in converting the vessel may be gained. Under the guidance of Capt. Young and Lieut, Pearson, the ship is now an outstanding example of a real naval training vessel.

The equipment supplied by Atlas for installation in the Lautaro consisted of two Model 6HM3358, 600 hp, direct reversible marine diesel engines, respectively with right-and left-hand rotation for twin screw drive. These engines are 15" hore by 19" stroke and develop their power at 300 rpm. Both of the engines were built to the inspection requirements

of the U.S. Navy. Since the vessel, as previously stated, is a four-masted barkentine, and the sails will be used for the greater portion of each voy age, the engines were especially equipped with Twin-Disk sailing clutches, operated through a simple ram with air valve control. The purpose of these clutches is to discon-







nect the shafting and the propeller from the engines when the vessel is running under sail alone, and thus eliminate propeller drag and permit the wheels to turn freely in the slip stream of the hull.

Both engines are handled by the Atlas "single lever" control. This device controls all functions of the engine from ahead to astern, dead slow to full speed, and proved to be quite a revelation to the Chilean engineering officers, not only from the standpoint of simplicity, but from its efficiency of operation as well. Additionally, the engines are equipped with Alnor pyrometers, and thermocouples, including one additional thermocouple in the common exhaust header. On the gage board they likewise have Weston Electric tachometers and direction indicators with a set of repeater indicators installed in the cabin of the engineer officer. Likewise, a Veeder-Root revolution counter is installed on both engines. The thrust bearing supplied on each engine is of the well-known Kingsbury type. The engines are further equipped with Bacharach indicator valves and a Bacharach indicator for record purposes, and, of course, thermometers are mounted to indicate temperature conditions of the cooling water in and out, the temperature of the lubricating oil, etc. Both engines are cooled by salt water, directly from the sea, with a recirculation system to maintain the most efficient cooling condition.

The engines drive four-bladed propellers, designed by the General Engineering and Dry Dock Co., 5' 10" diameter by 4' 9" pitch.

Auxiliary Equipment

Other equipment supplied by Atlas consisted of two Model MDGH-40 Reiner diesel marine generating sets, of 40-kw, 125-volt dc capacity. These sets are mounted on Korfund dampeners. The entire electrical needs of the vessel are supplied from these auxiliaries.

In the engine room proper other auxiliaries, likewise supplied by the company, consist of one Model D6-3N Morris fire pump of the centrifugal type, having 3" discharge, 4" suction of the single stage, double suction type, delivering 300 gpm at 100 lbs. psi when running at 1850 rpm. The pump is mounted on a cast iron base and is direct connected

to a 35-hp, dc motor through a flexible coupling.

The fuel transfer pump is a Viking model 2GX2D, capacity 5 gpm at 1200 rpm, and driven by a ½-hp motor.

The auxiliary air compressor is a Quincy Model D340, 51/4" x 3" x 31/2", two stage, air cooled unit with loadless starting and automatic connected to a 10-hp, 1750-rpm motor. All the motors for driving the above units are equipped with special starters of the Cutler-Hammer type.

The electrical operation of the two generator units is controlled from the switchboard, designed for parallel operation, having two sections with ammeter, voltmeter, field rheostat, circuit breaker, main line switch, and ground detector lamps, with reverse ground protection for the circuit breaker.

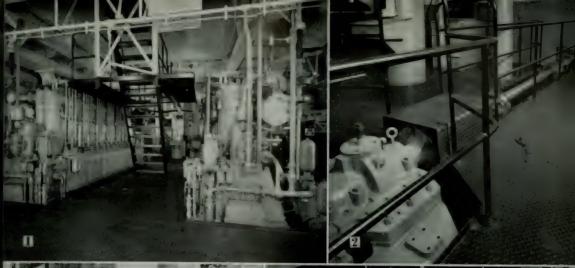
The starting batteries for the auxiliary generator sets are Exide, model 3DS-27-17, and each unit is supplied with a tray of four.

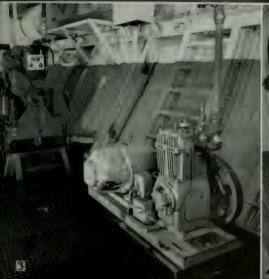
All the silencers for the main engines and the auxiliaries are of the Maxim manufacture, type MSC. The air receivers for the starting air, whistle air, etc., consist of five units, 29½" diameter by 103" length, built to American Bureau of Shipping requirements. A small Blackmer hand-operated transfer pump for the fuel,

(Page 96, please)

A close-up view of

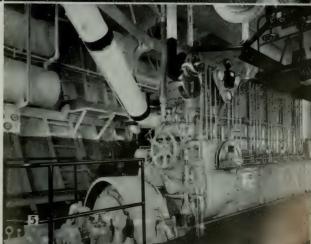


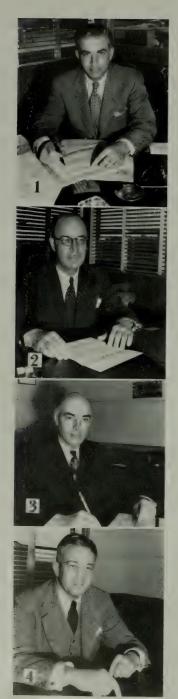






- (1) Engine room, looking aft between two main propulsion units.
- (2) After end of engine room, showing Kingsbury Thrust. Note neat, clean installation of engine room floor and of guard rail. The switchboard is in the background.
- (3) Port side of engine room, looking aft, featuring Quincy compressor and 40-kw Reiner diesel generating set.
- (4) Port fuel tank and service tanks, with power and manual transfer pumps.
- (5) The port main propulsion unit, looking forward.





APIDLY achieving a position of importance in the Southern California shipbuilding industry is the 18-month-old firm of Standard Shipbuilding Corporation of San Pedro, California. Within seven months after breaking ground of its 25-acre yard on the San Pedro waterfront, this young shipbuilding firm is expected to launch the first two of a fleet of all-wooden seagoing tugs for the Maritime Commission early in June. Two more of these 157-foot tugs are under construction, and, in addition, four 204-foot all-wooden barges are being built for the U.S. Army. Government contracts awarded the company at this writing total about \$4,500,000. It is one of four yards in the nation building tugs and barges of these types. Using mass production techniques, this modern, fully-equipped yard is expecting to launch a vessel a month.

At a time when the American shipbuilding industry is pushed to the limit in speeding production of Liberty ships, Victory ships and similar large vessels, often the smaller craft, such as tugs and barges, are given little thought or romantic interest. Their place in the war effort, however, is of great importance because of the vital service they perform in tug duties and freight hauling. The need in this field is for sturdy, well-built craft, and the company is meeting this need with well-designed, powerful ships to stand up

(1) J. A. Cosmas, president.

- (2) George Logothetis, vice presdent and director.
- (3) W. H. Walker, vice president and director.
- (4) J. Y. Leveque, treasurer and director.

under the most severe wartime de-

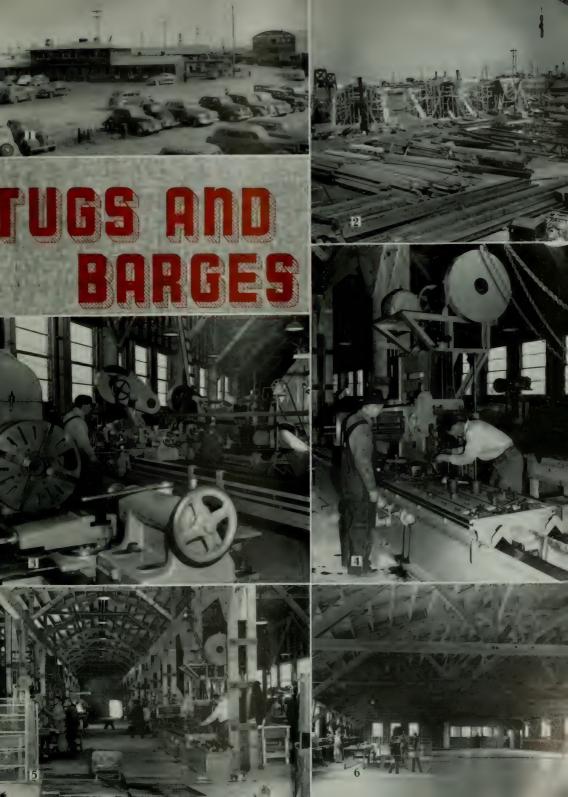
Although this organization might be considered the "baby" of the industry because of its 8 months of operation, it will have more than a fair chance to assume a leading position in the field some day. It is far from just a wartime operation. One turn around the yard is sufficient to indicate to anyone the permanency with which every building and improvement has been planned and constructed.

At present the large machine shop is doing custom industrial machine work of various types. Plans are under way to construct a floating drydock large enough to accommodate vessels up to 250 feet in length. Ship repairs are now being handled, and will undoubtedly become an important part of the yard's operations in the post-war era.

Besides the completely equipped machine shop, the yard has a 180' x 60' mold loft, a spacious two-story administration building, a first-aid hospital station, woodworking shop,

ON THE FACING PAGE:

- (1) Standard's Administration Building in the middle of the picture and the mold loft on the right center.
- (2) Late view of the yard, showing ways on Los Angeles Harbor Channel.
- (3) Section of the machine shop, showing a close-up of lathes for making rough
- (4) A Gray planer with a 24 x 24 x 72 bed.
- (5) Center view of the machine shop, 176 feet in length by 52 feet in width.
- (6) The mold loft is 60 x 180 feet.





toolrooms, employees' rooms, planing mill, pipe fitting yard, stores building, and docks facing on the deep channel of Los Angeles Harbor.

Numbered among the officers and directors are men who have spent most of their lifetimes in shipping,

ship designing and construction and engineering.

John A. Cosmas, president and director, has been a shipowner and operator all his life. Previously his offices were in London. One of his ships, the Santa Monica, is chartered

to the War Shipping Administra-

George Logothetis, vice president and director, is a graduate in industrial engineering from the University of London. Lately he has served as technical advisor to the U. S. Rubber Company in Des Moines, Iowa.

Another vice president and director, W. H. Walker, was prominent in Southern California banking circles for a number of years before assuming his new post.

J. Y. Leveque is treasurer and director. For the past 17 years Mr. Leveque has been well known in the financial and accounting fields of Southern California. He is a certi-

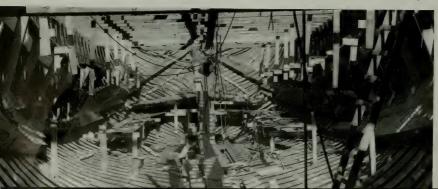
Boat No. 1, showing the stern.

Tug No. 2, interior view, looking forward to

fied public accountant, and maintains a financial interest in the accounting firm of J. Y. Leveque & Company, Los Angeles.

The yard's executive staff is well supported by a roster of experienced technical advisors, department heads and supervisors, some of whom have been prominent in the industry from 20 to 40 years, both here and in the shipbuilding centers of Europe. Were the problem one of building a whaler, bark, steam schooner, tug, barge, large seagoing liner or trim yacht, there is someone among the technical group who would know the vessel from tip to tip.

As to the future and attractive post-war period, when America will undoubtedly assume her rightful place among great shipping nations, this can be said about Standard Shipbuilding Corporation: The combination of capable experienced executives in key positions, ample capital, and a first-class yard fully equipped with modern facilities and machinery bids well to assure this firm of an important place among the nation's shipbuilding yards.



Interior of Tug No. 1, looking aft.



INLAND WATERWAY TRAFFIC

by Joseph B. Eastman

Domestic carriers by water are moving a very large volume of freight and are making an important contribution to the national war effort.

The increases in traffic on the Mississippi and Ohio Rivers have been largely in northbound traffic and in the movement of materials requiring gondola, or opentop, barges. A heavier volume of such commodities as coal and steel—particularly structural steel—combined with the withdrawal of 116 barges for conversion to petroleum carriage, has brought into use virtually all the available open-top barges.

The movement on the Mississippi and Ohio Rivers remains unbalanced, largely for the same reason that parallel rail movementment is unbalanced—the lack of balance being in the traffic itself, which moves in greater volume north and east.

Coal, well suited to water transport, is moving in great volume on virtually all the inland waterways—down the Monongahela. Allegheny and Kanawha Rivers to the steel mills at Pittsburgh; on the Ohio from Huntington, W.

The author is Director, Office of Defense Iransfortation.

Va., to Cincinnati and St. Louis, and from Kentucky mines downstream to Memphis. More than 600,000 tons a year moves up the Mississippi from the coal mines of lower Illinois to the Twin Cities, and a considerable volume is hauled from La Salle to Chicago on the Illinois River.

Mobile, Ala., is supplied with

Pushing them along on the Mississippi A towboat pushes a cargo of covered materials of war

River from the Alabama fields, while New England receives a heavy volume of coal moved by waterway and ocean barges from New York harbor piers and direct from Norfolk, Va. Coal also moves by barge from Norfolk up Chesapeake Bay and through the canal to the Delaware River and Philadelphia.

Steel, particularly structural steel, is moving in increasing volume down the Mississippi and Ohio Rivers to shipyards on the Gulf, while sulphur is hauled from Texas and New Orleans to St. Louis, Chicago and Pittsburgh, much of the Chicagobound sulphur moving, during the open season, on through the Great Lakes and the New York Barge Canal to New York.

Scrap iron for the steel mills moves from Texas points, New Orleans, Memphis and many other river ports to Chicago, Pittsburgh and other steel centers. Fluorspar—200,000 tons of it a year — moves on the Ohio from Indiana to the mills to serve as a flux in the production of steel.

A Mississippi towboat pushes a cargo of mixed freight upstream.

(ODT Photo from Office of War Information)



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frames are welded from used pipe, and run on old automobile wheels with Timken bearings. They have a span of 40 feet and a height of 20 feet. Other tools designed by this versatile genius include: a pneumatic chisel, pneumatic router and planer, and a pneumatic trenail and drift driver.

This yard is equipped with complete systems of electric, hydraulic and pneumatic power installed underground and feeding all the building ways and shops.

As will be seen in the illustrations, the barges built here are wood ship hulls and are lined up into ship-shape as carefully as the hull of any wooden sailing ship or steamer.

These heavy hulls present many problems to the moving and launching crews. The first hull, Redwood II, was moved 30 feet from its building berth to the launching ways. The other barges will have to be moved much further. When Redwood II reached the proper position above the launching ways her keel was over four feet above the launching ways. Hundreds of jacks were used in the very slow, extremely careful process of lowering her to the proper height. This operation took over two days. When she was at the proper height the launching cribbing was placed and wedged in, and the triggers adiusted.

Four triggers are used at this yard. These are secured in place by hawsers attached to mooring posts. Guillotines operated from the launching stand sever these ropes and release the ship.

The first launching of a barge at this yard was a gala event. Mrs. Carl Flesher, wife of the director of the West Coast Regional Construction Office, United States Maritime Commission, sponsored the vessel, attended by Mrs. J. S. Hines, wife of the publisher of Pacific Marine Review, as matron of honor. Notables present and taking part in the ceremonies were: Carl Flesher; Bruce Newby, Chief Wood Ship Construction, U.S. Maritime Commission; T. M. Woodward, commissioner U. S. Maritime Commission, and Clarence E. Wagner, mayor, City of Long Beach.

- (1) Layout platform and gastry.
- (2) Tank welding shop.
- (3) One of the lumber carriers.
- (4) A Lorain crane.

Maintenance of

Marine Diesels

II-Bearings and Wrist Pins

by Carl Johnson

WAST ARTICLE was about "Salt Water in the Lubricating Oil of Marine Diesel Engines and What It Does to the Bearings."

Here I would like to tell of my experience with bearings and wrist pins. Recently we have had considerable complaints of wrist pin trouble. Some of the ships had as many as twenty-four spare pins and bushings for the auxiliary engines aboard, and the crew had to work changing wrist pin bushings practically in every port, not knowing in most of the cases what made the bushings wear so quickly. This is what we found to be the trouble in four out of five cases. The main and crankpin bearings were too slack, allowing too much oil to leak out through same while the wrist pin starved for oil. I have seen cases where the wrist pin bushing wore down as much as one thirty-second of an inch in one week. In most cases the engineers would tell you the metal in the bushings was too soft, or any other wild guess.

My experience has always been that when the wrist pins start to give trouble it is time to adjust the main and crankpin bearings in that engine. When this is done and the engine is not losing the oil through same, then go to the wrist pins and bushings, and here is what you will find. If they still give trouble, the oil grooves in the bushings have not been rounded on the edges-not giving the oil a chance to slip in between bushing and pin. This also goes for the type of engine that has the groove in the pins instead of in the bushing or bearings. Taking away the sharp edges on an oil groove is more important than a lot of engine operators realize, especially on a two-cycle engine when the continual pressure is always from the

top and where you like to have an unbroken oil film

One other thing that has happened several times is that the wrist pin has been ground down one or more times to a smaller size and the hardness ground away. Not so long ago we were called up for a job where they had trouble with a crosshead. It heated up so much after about a five-minute run that the engine had to be stopped. In opening up, we found that the crosshead pins had been ground and the bearings had new babbitt-a very well-done jobbut here is what was overlooked: When the crosshead was ground it formed a sharp edge on the oil grooves. This type of engine has the oil grooves sitting in the bottom of the crosshead pins parallel with same, getting the oil through holes from the inside of the pins. This engine had no oil grooves in the bearings, so all that was necessary was to take a little portable grinder and remove the sharp edges from the oil grooves, and the trouble disappeared. am always in favor, if oil grooves have to be used like in crossheads. make same small, but with wellrounded edges, and do not let the crosshead or wristpins go out of round too much.

Main bearings can also give a lot of trouble, and they usually run into a lot of expense if allowed to go out of control. All diesel factories today send with all larger engines a bridge gage or other instrument which makes it possible for the engineer to check the condition of the crank-shaft, but I have known of instances when the engineer did not know what these instruments were for or how to use them.

On all the modern diesel engines you will find the thickness or crown on all the main bearings in one engine to be the same. This allows a

spare bearing to be used in more than one place, and it won't be necessary to carry a complete set of bearings. If it should be necessary to renew the babbitt in a bearing shell, it should be done in a place where they are familiar with this type of work, because a main engine bearing shell is most difficult to rebabbitt, as it has a tendency to warp and sometimes is hard to get back to shape. It is very important to have this bearing well seated in the engine base; otherwise the crankshaft can go out of alignment after the engine has been running for a while. Never raise or lower the crown in the new bearing. Check with the bridge gage or "mike" the new bearing with an old one in the line. The condition of the crankshaft can also be checked with an especially made dial indicator, which saves you the trouble of removing the top bearing for the bridge gage.

The crankpin bearings are the easiest to work with, and always give a warning knock if something goes wrong. Never let any bearing get too sloppy, and be sure if the bearings have shims that they fit so there is not too large a space between shaft and shims, thus allowing the oil pressure through same. Always have the crank pin bearing bolts tight, but do not strain them. If, when setting the crankpin bearings, a bearing should get too tight, do not just slack up on the nut and let it go at that. Add a small shim instead so the bolts can be tight and the bearing still free. In this way you would not be taking a chance of having the piston drop down in the crankcase when the engine is running.

Always keep the oil separators and oil strainers in good order, and keep the oil clean, and you will have very little bearing trouble in a diesel engine.

Training in Shipyard Supervision

Marine Cooks and Stewards Train at Junior College

by Mozelle Milliken

TEWARDS, COOKS and bakers are now being trained for the merchant marine at San Francisco Junior College.

With the approval of Washington, requests from local unions and cooperation of the local offices of the War Shipping Administration, the Junior College had demonstrated in notable instance just how effectively the nation's educational facilities may be at once and definitely geared to the war effort.

Applicants are now being received into the classes as rapidly as training facilities permit. These men, if properly qualified, are paid while training by the U. S. Maritime Commission at the rate of \$140 per month.

Proper arrangements must be made through local draft boards, and all requirements and restrictions, as set by Federal provisions, must be met before a man may be admitted to the class.

Organization of the new program has been made with the approval of J. C. Beswick, State Director, Vocational Training for War Production Workers, whose leadership in preparing men to meet shortages in man power has afforded notable contribution toward solving vital problems.

Crying need for men trained in the culinary arts to serve with the merchant marine has brought about this conversion of a former two-year training program for the hotel and restaurant industry, part of the general college curriculum, into a rapid and intensive training for men to serve in our ships' galleys.

With the new project, training has been speeded up to an intensified degree. First, only men already possessed of a certain background of experience in the trade are admitted to the classes. Second, all phases of the former course save those directly pertaining to the training of stewards, cooks and bakers, have been set aside for the duration.

Admitted to the classes now are those men whose work needs upgrading and those whose experience to date includes only limited phases of the necessary culinary experience. More specifically, cooks who are without baking experience are given intensive work in breads, sweet doughs, pies, etc. An eight-weeks' period is allotted for completion of this work. For bakers who are without training in range work and in menu planning, an intensive eightweeks' course is given covering roasting, vegetable cooking and all other phases of food preparation for chief cook, second cook and baker, and steward.

Competent instructors in bake shop and chef training were already a part of the vocational division.

Preliminary surveys resulted in the setting up of the new program in periods of eight weeks with elastic



Seagoing background and certain cooking experience is being upgraded by these men in the bake shop of San Francisco Junior College.



Loaves fresh from the ovens. Men in this picture are now feeding crews of the merchant marine after completion of intensive course at the college.

provisions for speeding up the time required by the individual student

As tapidly as possible, men who are deemed ready for sea duty are sent out for employment, without regard to preestablished time allot ments. Capable men, recommended for the course for upgrading, may enroll for any part of the course which they need. All are immediate by assigned to jobs as soon as recommended by the instructors, regardless of training time involved.

Operation of the Junior College cafeteria by the vocational division makes possible actual training in quantity cooking on a production basis. Food prepared is served daily to some 600 to 800 patrons of the cafeteria. All recipes are given in preparation for service to units of 25 to 100 persons.

Administrators of the college regard the rapid and complete reorganization of the division to wartime needs as one of the major achievements of the college in gearing for the war effort.

Executive head of the Hotel and Restaurant Division is Mrs. Hilda Watson, graduate of the School of Hotel Administration at Cornell University, and for the past six years associated with the Junior College after varied experience in quantity food work.

Instructor in baking is Ernst J. Hjorth, well known member of the college faculty and recognized baking expert, as well as experienced chef de cuisine in the hotel world. Range work is taught by Sauveur Georges Carbonell, former chef at Camp Curry, Yosemite National Park, and Hotel del Coronado.

Throughout a period of negotiations with various agencies representing the Government and other organizations involved, college administrators, representatives of organized labor and Federal offices have worked with untiring effort to iron out the intricate mass of detail involved in fitting the program to the best war effort.

First move to place the facilities of this particular college program at the disposal of the Government came through George D. Smith, chairman of the local group of hotel and restaurant men, who originally sponsored the training division.

Records of the division showed that, while it originally trained for work ashore, more and more graduates had been snatched up by the merchant marine during each of the past six years

With this record and its obvious conclusions as a bisis from which to reason, Mr. Smith together with administrators of the college, brought to the attention of the Federal Government the possibilities of training men directly for the present crisis.

Dr A J Cloud, president of the Jumor College, and Louis G. Conland, have worked closely with Government agencies, and inspired by Mrs. Watson's enthusiasm and the urgent cooperation of the local

unions, the plans for training have gone forward

Because of the varying backgrounds of the trainees and consequent variability of the length of their training periods, new members are admitted to the classes each week in such numbers as designated by Mrs. Watson to replace men who leave for sea duty

Information as to the course and the procedure of enrollment may be had by calling San Francisco Junior College, Juniper 4-4911, or by calling at the college, Ocean and Phelan Avenues, San Francisco, California

Therapeutic Suggestions for Absenteeism in Shipyards

by A. Von Drachenfels

THE AUTHOR

A. Von Drachenfels, author of this interesting article, has had a very varied and interesting career. Born in Siberia and educated at an American School in China, he has worked in various capacities all over the world.

He is now an assistant foreman in a San Francisco Bay shipyard.

His suggested solution for absenteeism in shippards attacks the problem from what might be termed the "psychological therapeutic" angle, based on wide former experience and intimate present contact.

with the assumption that most of our data taken from surveys in recent years is rapidly becoming out of date. Conditions arising from the tremendous expansion of industry, migration of workers and their families, and constant turnover of labor cwing to military induction, are playing havoc with men's environment and habits. The traditional means of power control by threat of penalty, lay-off or dismissal, loses its effectiveness in these days of critical manpower shortages. Such methods

should be substituted by broad-minded and careful investigation as to the fundamental causes for absenteeism. These causes, mainly traceable to insecurity and disruption of individuals' lives, should be treated with the tolerance and understanding they deserve. We must try and alter not so much the individual himself as the conditions affecting him. In general these conditions are fairly well known to us, and will be discussed later in this paper. What we know very little of is just how these conditions affect the mental and physical processes of the individual. To investigate these factors we must contact the man him-

Every industrial organization has records through which it could quickly sift out a number of the worst offenders in the various crafts. These offenders should be personally interviewed. It is very important to choose the right type of personnel man for such interviews, as workers are often suspicious and reluctant to confide. They should be made to feel at ease and to feel that their frank statements will be of benefit to themselves.

In order to better understand the individual's reactions, the interviewer should, before the interview, collect all possible data on the person. The following items can usually be gathered from original application forms:

- (1) Age
- (2) Marital status



A group of supervisors inspects a sample weld produced by Mrs.
Dorothy Gimblett and apparently finds it satisfactory.

- (3) Number of children
- (4) Where from
- (5) Previous occupation
- (6) Education
- (7) Sports and hobbies

After the purpose of the interview has been explained, and the individual has been put at ease, his own frank statement should be requested as to the reason for his being absent so often. This reason should then be placed on a blackboard, together with any subsequent reasons. This keeps the subject of the interview in plain view, encourages frankness, and gives the interviewed the satisfaction of seeing his statement in tangible form.

The next step is to discuss the matter with the individual along the following general lines:

- (1) Whether accompanied by family
- (2) If so, is wife working, and what hours
 - (3) Housing conditions
 - (4) Distance from work
 - (5) Food
 - (6) Home environment
 - (7) Distance from home.
- (8) Present recreations and hobbies, if any
 - (9) War-consciousness
 - (10) Health
 - (11) Suitability of present job
 - (12) Any other worries

It will be found in many cases that the original reasons given are really superficial and that the true reasons lie much deeper. If the interviewer, after this discussion, should, with the conscious acceptance of the interviewed, arrive logically at the real reason, then he should alter it on the blackboard.

At this point the interviewer may offer advice to help the individual, but our main purpose is not to cure the comparatively few we will come in contact with, but to try and find some sound basis for a plan of action to remove, or minimize, the underlying causes of absenteeism.

The next step is to summarize the data gathered from these interviews. This should be divided under the following general headings:

- (1) Domestic
- (2) Circumstantial
- (3) Industrial
- (4) Personal

We can list, for example, the following under the above-proposed headings:

Domestic

Family problems

Food

Illness at home

Environment

Circumstantial

Family disruption Draft board worry

Housing

Transportation

Recreation

Native antagonism

Industrial

Accidents Staggered days off

Lack of company policy

Unsuitability of job

Personal

Illness War oblivion

Fatigue

Indifference

Unwise spending

Drunkeness

Irresponsibility

Maladjustment

To go deeper into the subject we should cross-examine the above with the object of sifting out the most important. For this purpose it would be of interest to find out if absentees fall into any particular social or local group. The following headings are suggested here, and the percentage of absentees should be shown under

each. The list should be altered to suit local conditions.

Single

Married

Living with family Parted from family

Wife working

Wife not working

Local residents

Recently arrived

With organized recreation

Without organized recreation Draft classification

Living in hotel

Living in rooming-house

Living in apartment

Living in home

Living in Federal Housing Project Previous occupation:

Farmer

White-collar man

Industrial worker

Construction worker

Salesman

Percentage absent for each day of

After compiling and sorting out the above information, certain causes will show themselves predominant and we will begin to have a basis for action. However, a further step is strongly advocated. It is necessary for the various yards to compare notes on these surveys, and to take concerted action to eliminate the causes apparent therefrom. Broadly, we may divide the causes into those which may be peculiar to each yard, and those which are peculiar to a group of yards in a given area. Also, by comparing surveys, the yards may profit from each others' experience. Cooperation on these lines in the San Francisco Bay area, for example, could have excellent results.

Strictly speaking, one should approach the subject of cures for absenteeism with a completely open and unprejudiced mind, basing one's deductions on the proposed surveys. However, it would probably not be out of line to offer a little premature discussion, mainly with the view of illustrating some possible approaches.

Let us take for example the case of an employee who periodically indulges excessively in alcohol, and in consequence is unable to work the following day. In ordinary times such a person would probably be a habitual drunkard, and after one or two warnings would be dismissed. Let us now look at such a case in the light of current happenings. Applying our above outline, let us see which headings may fit the case.

Domestic

Family problems Environment

Circumstantial

Family disruption
Draft board worry
Housing
Recreation
Native antagonism

Industrial

Staggered days off Lack of company policy Unsuitability of job

Personal

War oblivion Indifference Irresponsibility Maladjustment

Applying the above headings, for the sake of a typical example, let us say that he comes under the following groups: parted from family, recently arrived, without organized recreation, living in a rooming-house, draft classification 3A, previously worked as a farmer.

This analysis gives us an overall picture of a lonely man, in a strange environment, torn from his family and friends, and without the hobbies. recreations, or ordinary daily routine to which he is accustomed. A man whose normal standard of education and habits leaves him completely at a loss for healthy mental distraction may, under the pressure of worry and loneliness, resort to artificial cheer through the medium of alcohol. If he is incorrectly placed on the job and the work is so organized that he has considerable occasion to be idle. and if the importance of his work has not been properly presented to him, he has every encouragement to be indifferent and irresponsible. If no outlet is provided for personal worry, the clouded and confused state of the mind leaves little room for commonsense thinking and reactions, and therefore cannot be expected to regulate a man's behavior along healthy lines

A strong indication emerges that

Arc welding quartet harmonizes on fast production.

Photo courtes In-Image Later 1



we have to deal considerably with the state of mind as well as environment, and it appears to follow then that our efforts to cure the causes of absenteeism should run along the channels of environment and mental armament. Where it is impossible to change environment we must provide the men with the mental armament necessary to overcome environment.

The following outline may suggest a possible means of approach to these problems:

ENVIRONMENT

- (1) Polite and considerate induction:
 - (a) Printed pamphlet explaining employee-relations services.
 - (b) Personal introduction to foreman.
 - (c) Organized attempt to make new man feel at home.

(2) Housing:

- (a) Rental agency in yard,
- (b) Map of city for newcomers.
- (c) Proper administration of housing projects.
- (d) Medical care for families in housing projects.
- (3) Recreation:
 - (a) Sports
 - (b) Libraries
 - (c) Socials
 - (d) Dramatics
 - (e) Religious services
- (4) Introduction service for out-oftown workers:
 - (a) Clubs for wives, especially swing and grave-yard

(5) Transportation:

- (a) Readily available schedules for buses, trains, etc.
 - (b) "Share the car" clubs
- (6) Six-day week with Sunday off:
 (a) More in line with normal
 - living.
 (b) Improved social opportuni-
 - (c) Conducive to order and regularity.
- (7) Cooperatives:

(a) Non-profit stores for housing projects.

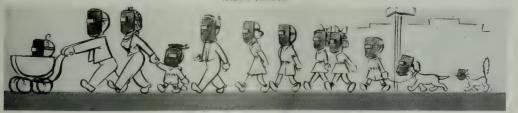
(8) Advice and complaints agencies where employees can personally get some sound advice on everyday problems of job placement, or financial trouble, and get some complaints off their chests.

MENTAL ARMAMENT

(1) Employee:

- (a) Induction:
 - (1) Explanation of yard functions.
 - (2) Safety
 - (3) General principles in ship construction.
 - (4) Significance of shipbuilding in war effort.
- (b) Follow-up:
 - (1) Encourage to attend training schools.
 - (2) Constantly plug importance of his job.
 - (3) Develop cause and yard loyalty through yard papers, social clubs, posters, radio.





(2) Employee's family:

- (a) Send a copy of printed pamphlet explaining yard employee relations services to wives.
- (b) Bring home to wives the importance of their husbands' work through yard papers, social clubs, nutrition services, radio programs sponsored by joint yard effort, yard advice and complaints agencies.

Many of the above ideas are in operation in most of the yards today. The effectiveness of these ideas can only be established by surveys of the results in the various yards. In many instances, especially in the case of new yards, there has been such a phenomenal expansion and growth that the organization has necessarily fallen behind the progress of such expansion, and, therefore, company policies are not properly defined and communicated to the employees, who in consequence have little incentive for loyalty. Wherever possible, employees must be made to feel that they are part of the organization, "partners" in the war effort rather than mere employees of a shipyard. On the other hand, too much back slapping should be avoided. Americans are not afraid to face facts, but have a tendency to look on the rosy side of the picture. Therefore, facts and figures should be amply broadcast to emphasize the grimness of the job before us.

Summarizing the ideas embodied in this paper, we have the following:

- (1) A thorough survey should be made through personal contacts with absentees to establish the outstanding causes.
- (2) Investigation should be made of methods already in use by the various yards as to their effectiveness.
- (3) The causes should be divided under those peculiar to individual yards, and those common to groups of yards.
- (4) Cures for absenteeism should then be workerd out and concerted action taken by groups of yards wherever possible.

From the standpoint of human relations, we should bear in mind the unusual conditions under which war workers are obliged to live, and, wherever possible, attempt to have employee relations services to alleviate these conditions.

PAPERS ON

SHIPYARD PROBLEMS BY SUPERVISORS

ACCIDENT PREVENTION

By Dante J. Lucchetti

One thing that is essential to speedy production in shipbuilding today is to prevent accidents to a minimum as much as possible.

Due to the negligence of the employees, and, in some cases, to the management, in not educating its personnel, an enormous number of man working days are lost during the year. A great amount of these accidents could be avoided by the cooperation of management and personnel in accident prevention. The management by displaying safety signs and danger signs where most needed, and the personnel by taking notice of such signs.

The management should have men instructed in accident prevention methods in each group so that they can observe if the worker is, or is not, complying with rules and regulations of the management in accident prevention. They should then be told and taught by the instructors how to handle such tools that are necessary.

The management should have danger signs and safety signs placed in all conspicuous places where they can be noticed, calling attention to the right and wrong way of doing a certain job, or handling a certain tool. This would reduce the number of accidents and at the same time be very educational and instructive to the personnel. It is the duty of all workers to report unsafe conditions.

Some of the major safety rules that should be observed closely are:

- 1. Men handling steel plates, cables, wires, etc., should wear gloves at all times.
- 2. Men chipping, caulking, riveting and grinding should wear safety goggles. "It is better to see through goggles than a glass eye."
- 3. Tools should fit properly an unfit tool might slip and injure a fellow worker.

SCHOOL DAYS RETURN

Students of a course in blue print reading at the naval shipyard at Port Newark (N. J.), operated by the Federal Shipbuilding and Dry Dock Co., U. S. Steel subsidiary. New shipbuilders must be trained rapidly to carry out the construction program, hence shipyard schools hold classes even on holidays.



- 4. All platforms should have guard rails and too bounds so curely nailed. Many accidents are caused by kicking toods off platforms, which have been negligently left resting on platforms by some worker.
- 5. Proper clothing should be used—loose cuffs and sleeves are very dangerous.
- 6. Welders should wear proper ever protection.
- 7. Weights should be lifted in proper manner. Safety hard toe shoes should be compulsory for protection of feet.
- 8. Helmets, or hard hats, should be used by all workers in construction areas or working under anyone
- 9. Yard should be kept clean and all accumulated debris 'removed. A clean plant is a safe plant. #Work safely—protect yourself and fellow worker."

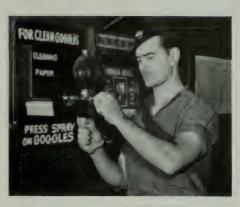
LACK OF COORDINATION BE-TWEEN DEPARTMENTS AND SHIFTS

By F. H. Deeben

Space for preassembly is valuable. Therefore, getting the proper material at the proper time would greatly increase the efficiency and time of work completed by sub-assembly department. With two or three decks in progress on a skid, there is not much room left for other work, so it is of utmost importance to get them completed and released at the earliest possible moment, and if there is a piece or two of material for both or either deck missing, it is going to lay there until the piece is located and assembled, meanwhile taking up space which should be used for the sequence following. If, when such a situation arises, we were able to send an order out in the morning for a particular piece, receiving it within two or three hours, or even during the day, we would consider ourselves fortunate, but under the present set up it usually takes from a week to ten days to get returns on a material shortage order.

SERVICE STATION FOR DIRTY GOGGLES

An arc-welder at the Westinghouse Sharon Works steps up to one of the convenientlylocated soap-and-paper dispensers to clean his gaggles. A drop or two of the cleaning solution and a piece of paper quickly does the job.



I have attempted to trace the source of this delay and in my opinion it is caused by the fact that the order has to clear too many different departments.

Just this past week I attempted to trace the delay on a gun platform shield, which had been on order for 10 days, and found that after clearing one or two clerks, the order reached the third, who took it for granted that there wasn't any plate of that size in the yard and pigeon-holed the order. Meanwhile, the gun platform was taking up valuable skid space. As I was following the order through, I finally located it at this clerk's desk and it was his opinion that we had no plate of this size. However, through previous investigation I knew there were some, so after persuading him to check, the order was cleared and the steel reached the skid in about twelve hours. How much longer it would have taken through the ordinary channels I do not know. This is just one case, but it is one of the many which occur far too often if we are going to get the best out of the men and the equipment.

BAFFLED BY BLUEPRINTS

By Charles J. Hruby, Jr. Marinship Corporation

Among the problems of training shipbuilders, blueprint reading stands out as the most difficult to the trainee.

The majority of new hires grasp the handling of tools rapidly and soon are familiar with the terminology of ships and shipbuilding. Most new hires, however, admit that they are mystified by blue prints. Those interested in advancement usually enroll in a blueprint reading class but after completing the course are still baffled on many points.

The average blueprint reading course includes the study of shipbuilding abbreviations, symbols, types of lines used in drawings and the placement of views on the drawing. The student also makes drawings of simple objects learning to visualize the solid object from the various views on a single plane.

Armed with this information, the student returns and finds himself still confused by drawings more complex than the three elevation plans he has been studying.

The factor most responsible for this confusion is the very poor legibility of the average ship blueprint. Repeated duplication of the print by photostatic processes cause the lines to run together and dimensions, details, and lettering are often difficult to decipher. The many detail views, sectional views references and alterations also add to the confusion.

Many changes could be made to improve these conditions. Drawings covering a smaller section of the ship would permit a larger scale to be used. Using a larger scale for detail and sectional views coupled with larger letter-

(Page 96, please)

Pacific Shipping News

By Special Correspondents

A TRIBUTE TO JANET LORD ROPER

When I arrived in New York, they told me that Mother Roper had passed on. They are mistaken. They are landsfolk who do not live in our world. Mother Roper lived in our world. Our world is each ship that we are on.

History can change overnight. You can be visited by Fire, Flood, Famine or Epidemics, but our little world goes plowing along under the stars, without one little care about your Politics, your Ration Books, or your Easter Parade.

Mother Roper belonged to a thousand ships. Therefore she belonged to a thousand little worlds. When we are ashore she took care of us in your world, which is foreign to us, until we went back aboard our own little worlds.

Mother Roper has not passed on. She is still with us, in Mrs. Cathers', staking us to another night's lodging and three more meals; in Miss Lang's correspondence to people looking for their missing sons, brothers or fathers; in Miss Conrow's fingers as she plays our favorite pieces on the organ in the Chapel or hands out a best-seller from the library; in Dr. Kelley's pat on the back as he says, "Well done, sailor." In a thousand different ways, she is still with us and always will be.

She has dropped her anchors in Snug Harbor, but her Anchor Lights are so bright that sailors can see them around the world.

Seaman Arthur George Montagne

Concrete Ships Help Set Record

Concrete Ship Constructors' plant at National City, California, completed and delivered three of the Maritime Commission 14,000-ton-displacement reinforced concrete oil tank barges during the month of April. Two of these went to the Navy and one to the Maritime Commission. Another barge previously delivered makes a total of four of these tankers now in service, with a total of three in the Navy. All reports indicate that these unique vessels are highly successful and are delivering better than 50,000 barrels of oil or gasoline in good condition every voyage

The seventh concrete barge was launched at the plant on Sunday evening, May 16. The ceremony was in honor of the plant worker families with the largest number of members in the armed forces. The sponsor, Mrs. Clyde Lyman, wife of the plant rental equipment superintendent, has three sons and four

sons-in-law in the fighting forces and is herself an electrician at the Naval Air Station at North Island —certainly a hundred per cent family.

With seven ships afloat and four

completed and delivered, the yard has set the pace for the concrete ship program. Other plants will have to do some sprinting to catch up, as none has yet launched a vessel. There are five yards engaged in concrete ship production and over a hundred such vessels are under contract.

Capt. R. C. Brennan Honored

Named in honor of Captain Richard C. Brennan, who lost his life when his ship was torpedoed in the Caribbean last December, the 8,500-ton steel Liberty ship R. C. Brennan was launched May 21 at the Oregon Shipbuilding Corporation in Portland, Oregon. The vessel's sponsor was Captain Brennan's widow, a resident of Portland.

Joe Brennan, port director for San Diego, a brother of Capt. Brennan, attended the ceremony.

Captain R. C. Brennan, one of the best-known figures in Pacific Coast shipping, came out of retirement to take command of the Liberty ship Nathaniel Hawthorne, and met his death on her maiden voyage. During the last war he commanded the transport Yale and, as a lieuterant commander in the naval reserve, received the Distinguished Service Cross for meritorius service. He served the Pacific Steamship Com-

American merchant marine seamen arriving in overcrowded Seattle from the sea lanes soon will find the Penbrook Hotel, Fourth Avenue and Marion Street, set aside for their exclusive use. The Seattle Port Area Committee of the United Seamen's Service has leased the hotel. The Penbrook will be operated by its present staff. It has 99 individual rooms and 36 apartments.



pany is their operating manager in the Orient and also at that head quarters in Scattle. His last shore position before returning was superintendent of the Oceanic Terminals in Portland

A Well-Deserved Honor

The San Francisco Marine Exchange has always been noted for the completeness and accuracy of its ship-position reporting. For many years this work has been under the capable supervision of Miss Florence Tully and her efficient assistant, Miss Volna Rush

The attention of San Franciscans was suddenly turned to this quiet but almost inestimably valuable service when these two ladies were chosen as sponsor and maid of honor, respectively, for the Liberty steamer Joseph Smith, launched at Richmond Shipyard No. 2, on Maritime Day, May 22, 1943.

This was a well-deserved and very appropriate honor for two ladies whose great service to the marine community of San Francisco has been performed with such quiet efficiency that only a few citizens were aware of its existence.

Seattle Propellers

Officers of the Seattle Port of Embarkation at a dinner of the Propeller Club of the United States, Port of Seattle, on April 29, told of the responsibilities of the port and reviewed the history and some of the present operations of the Army Transport Service. The speakers included Brig. Gen. Eley P. Denson, commanding general of the port, and Col. T. J. Weed, deputy port com. . mander. Motion pictures of United States Army landing operations and American troops abroad were shown. Philip M. Crawford, president of the club, announced that because of the war the Annual Seattle Steamship Dinner will be canceled. The club voted support to Portland, Ore., in its efforts to obtain the national convention of the Propeller Club of the United States in 1944.

It was decided to sponsor the marine exhibit at the Seattle Art Museum, and all members were urged to view the ship models and historic fragments of old ships. The club voted support of the Seattle Chamber of Commerce campaign to obtain regional offices of the War



At the christening of the Joseph Smith. Miss Florence C. Tully officiates as sponsor while Miss Yolna Rush assists as maid of honor.

Manpower Commission and the War Production Board for Seattle.

A Sardine Problem

E. B. McGovern of Seattle, president of the firm of McGovern & McGovern & McGovern, producers and distributors of sardines, salmon and tuna, feels that a real crisis is faced by the nation's vital livestock, dairy and poultry industries due to the acute shortage of fish meal, which is an important source of high-protein feed. He suggests the following considerations for official notice:

Fish meal has been termed America's foremost ranch hand, and rightly so, because it is the basis for the scientific feeding of dairy herds, poultry and meat animals.

Many well-meaning persons think of fish meal in terms of fertilizer instead of in terms of butter, milk, eggs, cheese, poultry, veal, pork, mutton and beef. Less than 1 per cent of the fish meal produced is used as fertilizer.

The reduced production of Pacific Coast sardine meal in 1942 was not entirely due to war dislocations. The State of California regulations played their part in reducing production, First of all, reduction plants

are limited to an annual permit of 4,750 tons, and are permitted to process only a certain fixed quantity each calendar month during the season, even though fish may be running heavy and are available. Regulations should be relaxed permitting a larger monthly take in proportion to the run. An increase in the annual quota should be considered in line with the increased catch of herring permitted in Alaska.

The distribution of fish and fishing boats should be made so as to make the most efficient use of the available plant and boat facilities.

The success of the California sardine industry is of great concern to Seattle and the Pacific Northwest, as many fishing boats participating in the sardine catch are built, owned, outfitted and manned by residents of the Pacific Northwest and Alaska.

Seattle SPARS

The Coast Guard has leased two floors of the Assembly Hotel in Seattle for the exclusive use of Coast Guard SPARS. The young women will be under military discipline while at the hotel. The Coast Guard will have its own kitchen and dining room at the Assembly. The food will



The flag-draped 1000th steam steering engine is ready to leave a production line at Webster-Brinkley Co. Left to right: Thomas J. Bannen, vice president of the company; R. A. Wirfel, pricipal procurement officer, West Coast Office, U. S. Maritime Commission, Oakland; John G. Conkey, assistant director of the procurement division, U. S. M. C., Washington, D. C.; George Gunn, Jur., president of Webster-Brinkley.

consist of Government rations and will be cooked by enlisted SPARS. These quarters are to be ready in July.

Well-Known Master Passes

Captain Henry A. T. Candy, well known to the marine fraternity as the commodore of the United States Lines, died at Southampton, England, on May 1. He retired in 1932. Captain Candy will be remembered as master of the turbo-electric liners California, Virginia and Pennsylvania, on the maiden voyages of each of those ships in the Panama-Pacifice Line service from New York through the canal to San Francisco.

Naming Liberty Ships

With a schedule of deliveries that calls for the launching of four Liberty (E-C-2) 10,000-dwt steamers every day in these United States, the naming authorities of the U. S. Maritime Commission are gathering quite a "Who's Who" collection of monikers. At first the names selected were those of revolutionary and pioneer heroes. Thus, the first Liberty steamer launched was appropriately named after Patrick Henry ("Give me liberty or give me death").

Today we are running far afield in the search for suitable names. Indeed, a complete roster of the names given to these ships would cover the history of our nation.

During the month of May, in the Richmond Shipyards alone, these names ran the scale from Joseph Smith, founder of the Mormon Church, to the recently-deceased George Washington Carver, noted negro scientist.

The 1,000th Liberty ship was de-

livered on May 29. She is the Robert Lowry, built at Delta Shipbuilding Company of New Orleans.

200 For Victory

California Shipbuilding Corporation, during the week beginning May 30, climaxed a month's "200 for Victory" celebration by launching the Liberty steamer Billy Mitchell, their No. 200, on June 2.

The closing days of May at Calship included:

(1) Tour of inspection on Thursday, May 27, by Real Admiral Emory S. Land, chairman of the U. S. Maritime Commission, of the yard, and presentation on Friday noon by

him of the Eagle award, or 11th star for the yard's M-flag.

- (2) Launching of a nine-foot self-propelled scale model of the Billy Mitchell on "Way 1" in General MacArthur Park (formerly Westlake Park), Los Angeles, on Saturday at 10 a.m., with thousands of school children in attendance.
- (3) Two elaborate shows featuring Kay Kayser and his band at the Shrine Auditorium on Saturday, May 29, free to Calshippers. Admittance restricted to a Calshipper and one friend.
- (4) More than 60 Southern California newspaper publishers and editors visited the yard on Friday afternoon, May 28, toured the yard, attended a launching, a press conference for Admiral Land and a buffet supper.
- (5) Six launchings within seven days.

Admiral Land and his staff inspected the Thomas Oliver Larkin, Calship's 189th Liberty ship, on Friday morning, and Admiral Land was the guest of honor at a yard luncheon following the noon yard show high lighted by the Eagle award.

Whatcom County Goes Over

Bellingham Marine Railway & Boatbuilding Company, at the launching of the mine sweeper YMS-343 on May 1, celebrated the dramatic conclusion of a country-wide

Heavy duty truck and trailer equipment is a prime requisite in the modern shipyard. Here is a scene in Marinship, Sausalito, Calif., showing a Freuhauf semi-trailer hauling a tail shaft and a huge propeller.



program sponsored by the Bolling ham lumer Chamber of Courses, and the Whateom County was board staff to raise \$150,000, the contract price of the vessel, built for the United States Navy

The goal of \$350,000 was ever subscribed by more than \$200,000 of series 'F' war savings bonds. The highest sale of "E" bonds for any previous month in the same county was \$237,000.

Shipyard Extension

The Everett Pacific Shipbuilding Company has been authorized by the U.S. Navy to extend its plant at Everett, Washington, to accommodate repair work on ships up to 10,500 tons.

This project will cost approximately \$5,000,000 and will employ 1,500 additional men. It is expected to be completed in seven or eight months. The addition of ship repair facilities was interpreted as bringing permanency to the Everett shipbuilding and ship-repair industry, with probable post-war employment of 2,500 men.

It also was announced that the company has been awarded a \$3,500,000 contract by the Federal Bureau of Yards and Docks for the construction of an 18,000-ton drydock.

Ripple Rock Warning

The work of removing Ripple Rock in Seymour Narrows, British Columbia, is under way and will continue for eight months. The Coast Guard warned mariners that the drill barge, 150 feet long, painted green and displaying two black balls by day and two red lights at night, must not be approached within 300 feet.

Personal Gleanings

Cecil Drake, well known in Southern California for years as the representative of the Superior Engine Division of the National Supply Company, with headquarters at Torrance, has now become chief engineer for the Hodgson, Greene, Haldeman Shipbuilding Company at Long Beach. Mr. Drake is owner of the tuna boat Wilmar, operating out of San Diego.

Lieut. Howard Esary, public relations officer of the United States Maritime Service, with headquarters at Los Angeles, was in Seattle recently on a tour of the Pacific Coast. He is a former Seattle radio announcer. He left in 1936 for Los Angeles to join the Don Lee Broadcasting System.



Pacific Marine Supply Company, pioneer Seattle institution, on April 24 was awarded the Army-Navy "E" pennant for meritorious and distinguished service in the war effort. In the picture, left to right, are: Capt. L. J. Stecher, U. S. N., district inspector of Navy material, who presented the pennant to the company, its officers and employees; Edward Cunningham, vice president and manager, who accepted the award; and Col. Robert I. Randolph, assistant chief of staff, Services of Supply, U. S. A., who presented the "E" pin.

Dean Ballard, for six years manager of the labor relations and foreign trade departments of the Seattle Chamber of Commerce, and widely known in shipping circles, has joined the Distributors' Association of Seattle, Inc., as manager.

Death recently claimed two Seattle waterfront leaders, Arthur Wuthenow, vice president and general manager of James Griffiths & Sons, Inc.; and William Clausen, marine superintendent of the Pacific Coast Coal Company. Mr. Wuthenow died on April 16 and Mr. Claussen on April 17.

Ralph Turman of the Richfield Oil Company has been elected president of the Seattle Industrial Traffic Managers' Association. Other officers chosen are R. G. Frederick of I. F. Laucks, Inc., vice president; J. L. Young of the Signal Oil Company, secretary-treasurer.

The Seattle Port Area Committee of the United Seamen's Service, of which Frank Moran is chairman, gave an informal dinner on May 13 in honor of Robert Falconer, national director of the U. S. S., who has been making a tour of the Coast, He was accompanied by Mrs. Falconer. Plans of the United Seamen's Service for a social and recreational center in Seattle were discussed.

New Dry Dock Proposed

With the trend in tuna clipper construction toward larger vessels, and the lack of facilities in San Diego to handle the newer vessels, the San Diego Marine Construction Company decided to install the required drydock at their plant.

Plans are now being prepared to cover a wooden pontoon floating drydock of the self-docking type. The structure will have two wooden towers 147 feet long, 10 feet wide and 25 feet high, each in a single unit. These will be supported on four wooden pontoons 70 feet wide, 36 feet long and 8 feet, 6 inches deep, with aprons 20 feet long, to stretch the keel block length to 187 feet. Vessels up to 225 feet length and with a maximum weight of 1,800 tons can be lifted. There will be two 10 mch pumps, one on each side of the centerline bulkhead, in each pontoon. All will be controlled from a central control house located on one of the towers. The usual sluice valves will be provided for flooding and sinking the dock. The design is by Dean B. Johnson, Naval architect for the com-

This dock will have a capacity of 1,800 tons and will take vessels up to 225 feet in length.



by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

VIII-Electric Propulsion Equipment (cont.)

Testing and Drying Out Generator Windings

Generators should be dried out when first started, or when started after standing idle for a considerable period, unless it is certain they have not accumulated dampness. The condition of windings as regards moisture can best be determined by measuring the resistance to ground of the insulation by means of a "megger" or megohm indicator.

The following approximate rule will indicate when it is necessary to dry out a winding:

Megohms (cold) should not be less than:

Normal Voltage at Terminals × 3_

Rated Kva
$$\frac{2370 \times 3}{5400} = 1.32 \text{ meg.}$$

When the windings are at approximately 75 C and are clean and dry, the insulation resistance should, in accordance with ASA Standards, be not less than:

Rated Voltage of Machine
$$\frac{\text{(0.01 \times Rated Kva)} + 1000}{1054} = 2.25 \text{ meg.}$$

Measuring Insulation Resistance

The simplest method of measuring insulation resistance is to use a megger, which indicates the resistance directly in megohms. If a megger is not available, the voltmeter method can be used; in this case the procedure is as follows:

A direct-current source of voltage

and a direct-current voltmeter of sufficient capacity to measure the full line voltage are required. First test each side of the direct-current circuit with the voltmeter to see if it is solidly or partially grounded. If either side shows a ground, connect that side to the frame of the generator through a fuse of 10-ampere capacity. or lower. Now connect one terminal of the voltmeter to the high side of the line and the other to the grounded point. Read the voltage and call this reading V. Disconnect the meter from the grounded point and connect to the terminal of the winding under test. Read the meter again and call this reading V1. Determine the voltmeter resistance (usually given inside of the cover) and call it R. Then the insulation resistance in ohms is:

$$r = R \left(\frac{V}{V_1} - 1 \right)$$

One side of the circuit must be free from grounds, and the grounded side is connected to the frame to insure measuring the resistance of the insulation only. The small fuse in series with the grounded side is for protection in case of accidental grounds elsewhere in the circuit during the test.

In order to tell when the drying has been carried far enough, the rate of change in resistance while the drying is in progress is probably the best indication. For this purpose readings of resistance should be taken at intervals of not more than 12 hours.

The insulation resistance usually

drops quite rapidly as the windings heat up, due to the change in specific resistance of the insulation. The resistance reaches a minimum value about the time the windings come to a constant temperature and then increases as the drying progresses. At first it increases quite rapidly, then more and more slowly until it reaches a constant value, usually towards the end of the third day. Machines that have been water-soaked will require a considerably longer heat run.

Use of Direct Current to Dry Out Windings

Note: The revolving field (generator rotor) should be stationary or not assembled in position.

Connections: The connections are determined to some extent by the voltage of the supply circuit and the amount of power available.

One side of the supply circuit should be connected to No. 1 terminal and the other side to No. 2 for a few hours and then changed to No. 3 for an equal time and the connections changed around periodically as the drying progresses to heat the winding uniformly

Current: The amount of current required usually is between 60 and 100 per cent of full-load alternatingcurrent as shown on the nameplate.

The drying should be started with a low current and gradually increased until the exploring coils show a maximum of 85 C. This temperature should not be reached inside of six hours from starting the drying, and must not be exceeded.

Revolving Field: Determine the temperature of the field core by a thermometer. With the field stationary, apply direct current from the excitation circuit and immediately read the current flowing and the voltage drop across the collector rings and compute the field resistance at the temperature shown by the thermometer.

The current should be increased gradually and the temperature checked by resistance readings until a maximum of 125 C is reached. This temperature should not be reached inside of six hours, and must not be exceeded.

Note: The regular brushes must not be used to carry current when the field is stationary; otherwise local heating will occur under the brushes and cause blackening of the rings and probable damage to the brushes. In salt-air conditions there may also result pitting of the rings due to electrolysis Clamp copper bands around the rings and attach cables to these bands

The field temperature can be determined by using the following for mula

$$R = -\frac{R}{r}(234.5 + t) = 234.5$$

where t = reference temperature in degrees C

T the temperature sought R = the observed resistance

r = resistance at the reference

The factory average test value of "r" at 25 C for the revolving field of this machine is 0.44 ohm

Short-Circuit-Current Method of **Drying Out Armature** Windings

The armature winding of a turbine-generator can be dried out by short-circuiting the main terminals and applying field current until a specified armature current is caused to flow in the winding. Normal rated armature current should not be exceeded during this process. The total temperature of the winding as recorded by the highest-reading temperature detector must not exceed 85 C during the drying out process, and the armature current must be controlled to meet this condition.

When a generator has become soaked with moisture the mechanical strength of the insulation is reduced considerably. To prevent crushing and breaking of the field insulation, the rotor must therefore be run at reduced speed until it is thoroughly dried out, as shown in megohm test. This means that in order to use the short-circuit method of drying out the generator while the field insulation is still moisture soaked, the speed must be kept low, preferably below half speed.

This low speed in conjunction with the flow of normal armature current will aid in heating the armature winding to a point high enough for drying

out at a proper rate.

The drying of a generator can also be hastened considerably by raising the temperature of the surrounding air. This can be done by restricting the air circulation in the machine by baffles, tarpaulin, etc., or by heating the ingoing air with electric heaters, stoves, or similar means, or by using a combination of the above two methods.

Care of Generator

The generator should be inspected at regular intervals, observing cleanliness, operation of brushes, condition of collector rings, etc. The tem perature of the armature windings should be noted as a sheek on venti lation. The temperature of the field winding should ilso be checked occasionally by measuring the resistance and then using the formula given herewith.

While the unit is totally enclosed to keep out dirt, oil, moisture, etc., it should nevertheless be inspected at intervals and cleaned out if necessary, using vacuum cleaners or lowpressure compressed air. The cable and bus joints should be kept clean and free from oil and dirt.

Inspect the brushes regularly to see that they move up and down in their holders. Keep the rigging free from metal particles, dust, oil, etc. Inspect the wearing surfaces of the brushes occasionally and keep the full surface bearing on the rings.

Scoring of the brushes is usually due to hard particles becoming imbedded in the contact surfaces. These should be removed by re-sanding and refitting the brushes.

Pitting of the collector-ring surfaces may occur when the generator is left idle for any considerable length of time with the brushes resting on the rings, particularly in moist salt air. This is caused by electrolysis between brushes and rings. To prevent this action, the brushes should be raised off the rings during such periods of shutdown. Pitting must be removed in severe cases by turning and then polishing the rings at speed to a mirror finish with crocus cloth or, in light cases, by dressing the rings at speed with sandpaper, followed by polishing with crocus cloth.

If the brushes begin to chatter the cause is probably irregularities, flat spots, etc., on the ring surfaces. Prolonged chattering will probably cause chipping of the brushes, and should be corrected as soon as possible. This may be done by clearing up the collector rings in the manner described above for "pitting." At the same time care must be taken to see that the brushes do not bind or stick in the holders. The brushes need no lubrication, and the rings should be kept free from coating and scaling of any kind by cleaning periodically with carbon tetrachloride or similar sol-

Removal of Generator Rotor

In the following it is assumed that the coupling between the turbine and generator is broken, that the coupling end of the generator rotor is blocked or jacked in position, and that the generator inner and outer air shields and rings have been removed

- (1) Remove the turning gear
- (2) Place a jack or block under the generator rotor at the pedestal end of the machine
- (3) Remove the bearing cap and the bearing lining, and then remove the pedestal.
- (4) Place a curved piece of sheet metal, equal in width to the stacked length of the core, in the air gap between the rotor and the armature, and lower the rotor until it rests on this
- (5) By means of a crane or a chain falls, slide the rotor out of the armature. Care must be taken not to allow any part of the rotor to scrape against the insulation of the armature coils or connections.
- (6) Do not try to lift the rotor with slings or chains on the collector rings. Protect the fan rings against slings or chains bearing directly on them.

ROLLING STEEL FOR LIRERTYS

This 97-ton metal monolith shown being machined at Westinghouse Electric & Manufacturing Company will be installed at a new steel mill to roll plates for Liberty ships. It is a housing for a three-high rolling mill. The "window" in which the inspector stands will hold roll bearings and the hole at the top will contain "screw down" mechanism for putting pressure on the rolls.





Steady as you go! KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A DEPARTMENT FOR DECK OFFICERS

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome St., San Francisco, California

CONVOY REGULATION II—Security and Safety

Last month we discussed the problems of handling ship in a convoy, and the composition of the convoy itself. Many of the rules and regulations governing a convoy are of a type that many merchant marine officers are inclined to oppose silently, or at least fail to observe strictly. In most cases this is because these officers fail to understand the cause for and the reasons behind most of these regulations.

Positive Blackout

One of these is the darken ship problem. Everyone understands that there should be no running lights used, or even lights showing from port holes, yet the same person will question the need for refraining from smoking. It is hard to make him believe that a lighted match even for just an instant could possibly cause trouble, and even less the glow of a cigarette.

If these flickers of light were all that the enemy had to go by, there is no doubt but that there is a possible excuse for this line of thinking. We learn a lot from our own submarine people, and if you look at this question from the angle of the submarine, you can see where that fleeting glimpse of light does the trick.

A submarine will stalk a convoy for hours before it will attempt to attack. This is particularly true if the escort destroyers have not detected him. With the aid of his detectors he knows the approximate position of his selected target. He gets the best position he can with his instruments, and determines his firing angle and torpedo course. The minute he fires that torpedo he knows that he will be pursued, and he wants to make a hit before that happens, so he hesitates to fire on calculation until he must.

He is all ready and waiting for the moment he decides to let go, and all of this time he is hoping for just one glimpse of the target to verify his instrument position and target angle. He might get that glimpse from a patch of moonlight or the first crack of dawn, so he hangs on, hoping. Now if some accommodating soul aboard his target gives him the glimpse he needs by striking a match, or showing a cigarette, his long wait is over, he lets go his torpedo and his deed is done.

Many ships keep a well-darkened ship condition for days on end until the weather gets hot, and then the problem of open ports comes up. The blackout screens that let in a little air, and yet let no light out, are a big help in this warm weather. These screens do not satisfy some individuals, though, and it seems that on every ship there is one who will get ready to turn in, carefully put out his light, and then in the darkness remove the blackout screen. If his light remained out for the balance of the night this might be allowable, and be a perfectly safe procedure, but, as so often happens, he has a night watch, and the person who comes to call him will switch on the light, and there we have an unguarded port with a beam of light showing out for all to see.

This happens all too frequently in a convoy of any size. The enemy is waiting for just such a slip as this, so it well behooves anyone who has an open port to unscrew all light globes from their sockets in the vicinity of the open port that could possibly shine out even as a reflection from white paint. One cannot emphasize this point too much.

While we are on the subject of blackout, this should also mean a blackout of noise as well. No bells should be sounded on the bridge or in the engine room during the blackout period, for these sounds carry a great distance at sea. Many good authorities feel that ships operating singly in fog, where there is little danger of meeting any but enemy ships, should not sound their whistle. There is good logic in this, for a surfaced submarine, and they would be surfaced in a fog, could fire a torpedo on the whistle sound just as easily as from observation, and while you might pass unnoticed by the submarine, or more especially a raider. in thick fog, the whistle is an open invitation to come and get me.

Convoy Break-Up

Because it frequently becomes necessary for a convoy to break up, after crossing the most hazardous part of the ocean, and for many of the vessels of the convoy to proceed to their final destination alone, we will discuss the problems of a vessel acting singly, and of course these problems apply equally to the convoy as a whole. When in convoy, however, they are met and solved by the convoy commander, as they affect his charge.

When you set out alone for a given destination you will be given a recommended route to follow. Do so religiously, for in the event of attack, and you cannot get your position out, it can be readily computed, and if you are torpedoed, your survivors can be more quickly recovered. The route given to you is picked as the best route, and the one safest for you to follow, by those in the best position to know the reasons for selecting it for you.

Having seen the last of your companions dip over the horizon, you must now realize that you are alone in the vast sea, with very little armament, and, therefore, you are in no position to seek out the enemy, or to engage him. You will do your ed and get to your destination bet to the unever make a contact with any withat you are not scheduled or supposed to meet. For this reason at is well to keep distant from any smoke it any vessel that you might by chance encounter.

Because you are acting singly you me subject to many dangers that a convox is not. For this reason you have many things to keep in mind, and must be alert to all forms of langer. You may encounter the ever present submarine, an enemy man of war, or the harmless-looking but very potent raider.

The raider is powerless with a protected convoy, while a vessel traveling alone is his natural prey. The best of modern raiders have speed and are well armed, and many of them carry small scouting planes that are able to locate vessels alone, and to return rapidly to the raider with the description, course and speed of the prey

With the information thus obtained, it is possible for the raider to shape a converging course and arrange her speed so that she will fall in behind you during the night ready to open fire at dawn. It is for this reases, that it is well to avoid any vessel that comes up over the horizon, and a sharp lookout may give you a chance to avoid being seen. The importance of a good lookout in a clear day at sea cannot be too strongly stressed.

As far as possible, all changes of course should be planned so that they can be made after dark. This will upset the plans of any interception that might have been the results of plane detection during the daylight hours.

If your route takes you clear of the asually traveled lanes, the danger of submarine attack is less than if you tre on a regularly traveled route, but you are never entirely clear of this danger, for the submarine is always in the hunt for the lone vessel without protection. The older models, and many of the new cheaper radio receiving sets, are a big help to the submarine in his efforts to locate you. For this reason, none but approved radio sets should be used or even allowed on board your vessel.

Waste Disposal

Refuse and garbage disposal is another matter that you must give careful attention to. Absolutely nothing should be thrown overboard at any time without your permission, and

then all refuse should be disposed of nist as soon as the eschark, and thus you wall have twelve hours to get tway from it before it can be seen. When refuse is the wn overboard it should be in a contourer that can be emptied in one throw, and not strewn over a mile of ocean.

Refuse and floating debris that is thrown overboard piecemeal makes a ontinuous line astern of the vessel, and if it takes ten or fifteen minutes to clear the decks at makes a line like in arrow two or three miles long pointing the way for one and all to see.

An enemy plane or other vessel can pick up this line of refuse and from it determine the course of the vessel that disposed of it. One would hardly consider a heap of waste lying in deck as an indicator for the enemy, but improperly disposed of, that it what it becomes.

One shipmaster we know makes it a rule to change course ninety degrees while disposing of such material. It does tend to avoid giving his course away, but a line of floating material, no matter in what direction it points, is bad. It would be much better to bundle such material up and try to get it all over at one time, so that there is but one heap in the

You should never throw overboard inything that has the name of the vessel or even her nationality on it. submarines traveling on the surface of the water are very low, and can assly recover anything that is floating that they might be interested in, and you may be sure that they are interested in and take full advantage of any material that has to do with ships or cargoes.

Radio Silence

You are instructed to maintain radio silence. This is strictly imperative when operating singly. When you are undergoing enemy attack, and your instructions advise you to broad east the general signal for attack, then you are to do so. When you give this general attack signal you are also to give your position, if required. To have this position ever ready for instant use, it is advisable that you have prepared several copies of the ship's position for each half-hour interval, for the ensuing twenty-four hours. One copy of this you can give to the radio operator, where he may have it available for broadcasting when you direct a warning be sent out. This will also aid you, for you will then not have to prepare any message other than the letters signifying the type of attack.

The other copies of the ship's half-hourly position you can distribute among the officers in charge of the lifeboats, and a copy or two may be left near the boats, so that, should it become necessary to abandon ship, the ship's position will be available

An Allied Convoy at Sea

(Official U. S. Navy photo.)



for each boat. With enough copies of this position slip extant, one copy at least is bound to get into the lifeboats.

Safety at Sea

This war has brought out many weaknesses in our previous methods of safety at sea, or perhaps we should say that our safety at sea methods for peace times no longer fit these days of all-out war, and the U. S. Coast Guard is adopting new regulations and recommendations as fast as they are proved. While these new regulations are coming out, it might be well here to mention a few things that we have learned from shipmates that are alive to tell the tale, in connection with safety at sea.

That long-standing habit of seamen in the tropics of sleeping on top of hatches must be abandoned for the duration. In the event of torpedo attack, the sudden explosion will frequently blow the hatches off the cargo holds adjacent to the point of contact. In several cases the only personnel lost in submarine attack were those crew members on top of

the after hatches.

Much has been said about swimming through burning oil these days, and courses in water safety are given in every seaport about the best method of accomplishing this. The only trouble with this, though, is that it tends to make the idea of swimming through or in oil easy and possible. At best, and using any form of breast stroke, it is a hazardous undertaking, and should not be attempted if there is any place around the ship where there is clear water. It is much safer to encourage all hands to look around, take their time and coolly find the best place to jump, rather than to go over the side in burning oil, just to get off the ship in a hurry.

In handling a boat in the vicinity of burning oil to pick up survivors, one must bear in mind that where the oil is burning there is a rapid heating and rising of the air, and that there is a very strong near gale blowing toward the burning oil, that increases in intensity as one approaches the fire, and if the boat gets too close to it, it is almost impossible to prevent it from being blown into the fire, and all on board either lost or very badly burned.

Leeway for Masters

The law allows you as master great leeway in the interpretation of the regulations as regards the safety of life aboard your ship. This is a broad subject and well worth your attention

and constant study. Visualize the many conditions that might arise aboard your ship, and then do what you can to overcome the worst that could happen in every case. Make your plans to get your crew off in the boats with the ship sinking down by the head, and the crew having to travel to the boats. When you plan this all out, with lifelines along the passageways, then reverse the process and plan it with the ship going down stern first. You will soon see that there is no end to the work and thought required.

The question of having all boats swung out is another unsolved problem. Ships that have been torpedoed have lowered all boats and got all hands off safely because their boats were swung out and ready to do. Other vessels with their boats swung out and ready have had their boats cut away, and riddled with holes by the force of the torpedo explosion and its resultant debris. There are two very definite schools of thought on this, but we feel that a boat that goes down with the ship because she was well gripped to the chocks does no one any good, while a damaged boat may be repaired and be the cause of saving someone's life

Boat falls should be on reels and covered with light canvas that is easily slipped, for frequently the explosion of a torpedo has thrown oil up on the boat deck and so covered the falls that lowering of the boats was greatly impaired or impossible. It has been recommended that a bucket of sand or sawdust be available for this purpose, but a canvas cover would do the job much better and cause far less accidents in the actual lowering of the boats.

One more thought in abandoning ship: If you do not get away in a boat and must go over the side, do so on the low side if she is listed. Use a line if at all possible, and a

minute spent securing a line may be the means of getting off the ship safely and without injury.

If the low side should happen to be the weather side, and if there is much of a sea running, be careful lest you be washed back aboard. It is best under these conditions to go off the bow or stern, whichever is lowest, for the sea will then wash you clear of the vessel.

Remember always that even though you might lose your ship to the enemy, every life that you save is a life that is ready to carry on in our essential job of delivering the goods.

Unusual Award

An unusual honor has been paid the firm of Albert Kahn Associated Architects and Engineers, Inc., Detroit, for its work in designing buildings and facilities for numerous naval bases.

This is in the form of a special, hand-engrossed certificate of commendation from Rear Admiral B. Moreell, chief of the Bureau of Yards and Docks of The Navy Department, which reads:

"The Bureau of Yards and Docks, Navy Department, commends Albert Kahn, Incorporated, for outstanding services rendered.—Their devotion and unswerving fidelity to the tasks in hand when designing buildings and facilities for Naval Air Stations and for other Naval Stations on numerous Pacific Islands, Alaska and Continental United States in furtherance of The Navy War Construction Program."

Louis Kahn, president, shows a group of his associates the special certificate of commendation issued to the company for designing numerous naval bases.





New San Francisco Shop Opening



















AT
GENERAL ENGINEERING
AND
DRY DOCK COMPANY

 The company's men and women and their families attend the noon-hour dedication of the new San Francisco shop.

(2) Before an ingenious decorative background, the Captain of the Port Battalion Band of the U. S. Coast Guard, under the direction of Specialist Second Class Eddie Picetti, provided band and orchestral music for the ceremony.

(3) Frank Fox tours the new shop with Lieut, Comm. Harold Webb, Comm. Paul Fretz and Lieut. Leon V. Palmer of the Office of Assistant Industrial Manager, U. S. N. (4) Yeoman Third Class Harold Doolittle of the U. S. Naval Hospital gives his excellent rendition of "The Lord's Prayer."

(5) Aviation Radioman Third Class Johnny Martinez represents his fellow fighting men at the Oak Knoll Hospital, speaking at the dedication ceremony.

speaking at the dedication ceremony.

(6) F. P. Ritchie, superintendent engineer of the American-Hawaiian Steamship Compony, James Scott, manager of the War Shipping Administration in San Francisco, and Al Safholm, port engineer in San Francisco for U. S. Lines,

pause during their inspection of the new quarters.

(7) Al Fleming, who has been with the company since its inception in 1921, is applauded at the ceremony,

(8) Al Safholm and Capt. Vance Trout, operating manager of U. S. Lines.

(9) Dusty Dale Chivers works in the Sheet Metal Department.

(10) Captain J. W. Fowler, Assistant Industrial Manager, U. S. N. at San Francisco, is absorbed in "Shipmates," the company's own publication.



On the Ways - SHIPS IN THE MAKING



NAMED FOR HERO

Another destroyer, the Laws, was sent down the ways from the yards of the Seattle-Tacoma Shipbuilding Corporation in Seattle on April 22. The new ship was named for Leut. Alexander Laws, U. S. N., who did distinguished service in the Tripolitonian Wor of 1804. The Laws was christened by Mrs. Mary A. Farwell, wife of Comm. R. F. Farwell, U. S. N. R., technical adviser.

New West Coast Record

The West Coast again established a new record in monthly ship production in April when the United States Maritime Commission's four Richmond shipyards laid 24 keels, launched 24 ships and made 24 deliveries, Carl W. Flesher, Regional Director of the Commission, has announced Contributing to this accomplishment are Richmond Shipbuilding Co.'s Yards Nos. 1, 2, 3 and 4.

The launchings at the Richmond yards were listed as 21 Liberty ships, 2 special naval craft and 1 large 19, 800-ton C4 type vessel.

"Splendid endeavors on the part of ship workers are making this production possible," said Mr. Flesher, "in spite of serious shortage of welders. In meeting the wartime need for ships, we find that lack of sufficient welders has become a virtual bottleneck.

"Right now we could use tens of thousands of additional workers. We have organized a large welding school, with classes open to both men and women. Most women have an aptitude for welding, and turn out very creditable work."

Long Beach Saluted

Long Beach's importance to the nation as a war production center and vital seaport was saluted by the United States Navy and Consolidated Steel Corporation, Ltd., on May 5, when the harbor's first escort vessel, the U. S. S. Long Beach, slid down the ways.

The sleek battle craft, which will be used to aid in the all-out war against submarines, was launched from the yard's Wilmington ship-yard. Sponsor of the vessel was Mrs. Walter H. Boyd, prominent civic leader of Long Beach. Mrs. Boyd's matron of honor was Mrs. Clarence Wagner, wife of the mayor of Long Beach.

Many high-ranking Navy officers and Long Beach city officials attended the simple ceremonies before the launching. Mayor Wagner was the principal speaker, and Alden G. Roach, president of the company, was master of ceremonies.

The occasion constituted the first night launching ever held at the yard's local shipyards.

Merchant Shipbuilding For April

During the month of April United States merchant shipyards again broke all previous world records for ship production by delivering into service 157 ships totaling 1,606,600 tons deadweight, the Maritime Commission announced. It is the third consecutive month this year in which the output by American shipbuilders exceeded that achieved during the preceding month.

April production brings the total thus far in 1943 to 536 ships aggregating 5,370,200 tons deadweight. This more than equals the total tonnage constructed during the first nine months of the record-breaking year of 1942.

Delivery of five merchant ships a day has become routine. The April construction was at an annual rate in excess of 19,000,000 tons deadweight, the approximate goal set up in the Commission's schedules.

Not only was an all-time high established for the number of merchant ships and total tonnage delivered during any one month, but, in addition, California Shipbuilding Corporation at Wilmington, California, under McCone - Bechtel management, broke all previous records for a single yard by delivering 19 Liberty ships.

Another West Coast shipyard, the Oregon Shipbuilding Corporation of Portland, Oregon, under Kaiser management, was second, with delivery of 17 Liberty ships.

The Oregon Shipbuilding Corporation, however, continues to lead in the greatest productivity per way. That yard delivered its 17 ships from 11 ways, while California produced 19 on 14 ways and Bethlehem-Fairfield 16 on 16 ways.

The complete list of shipyards and the number and types of vessels delivered by each in April is as follows:

SHIP DELIVERIES IN APRIL

SHIPYARD No.	of Vessels	Type of Vessel
Alabama Dry Dock & Shipbuilding Co	1	Tanker
Avondale Marine Ways, Inc. Westwego, Louisiana	2	Seagoing Tugs
Barnes-Duluth Shipbuilding Co. Duluth, Minnesota	1	Coastal Tanker
Bethlehem-Fairfield Shipyard, Inc	16	EC-2 Cargo
Bethlehem-Sparrows Point Shipyard, Inc Sparrows Point, Maryland	2	Tankers
California Shipbuilding Corporation		EC-2 Cargo
Concrete Ship Constructors	3	Concrete Barge
Consolidated Steel Corporation, Ltd	5	C-1 Cargo
Wilmington, California	1	Special Type
Delta Shipbuilding Company, Inc		EC-2 Cargo
East Coast Shipyards, Inc	2	Coastal Tanker
Froemming Brothers, Inc	1	Seagoing Tug
Gulf Shipbuilding Corporation		C-2 Cargo
Houston Shipbuilding Corporation		EC-2 Cargo
Ingalls Shipbuilding Corporation		C-3 Cargo
J. A. Jones Construction Co., Inc Panama City, Florida	2	EC-2 Cargo
Kaiser Company, Inc	3	Tankers
Leathern D. Smith Shipbuilding Co		Coastal Cargo
Marinship Corporation	1	EC-2 Cargo
Moore Dry Dock Company	2	C-2 Cargo
New England Shipbuilding Co. (Formerly South Portland)	8	EC-2 Cargo
South Portland, Maine North Carolina Shipbuilding Co	10	EC-2 Cargo
Wilmington, North Carolina Oregon Shipbuilding Corporation		EC-2 Cargo
Portland, Oregon		Coastal Cargo
Pacific Bridge Company	2	C-1 Cargo
Beaumont, Texas Pusey and Jones Corporation		C-1 Cargo
Wilmington, Delaware Permanente Metals Corporation	7	EC-2 Cargo
(Richmond Shipyard No. 1), Richmond, Calif. Permanente Metals Corporation	13	EC-2 Cargo
(Richmond Shipyard No. 2), Richmond, Calif. Kaiser Company, Inc.	4	Special Type
(Richmond Shipyard No. 3A), Richmond, Calif. St, Johns River Shipbuilding Co		EC-2 Cargo
Jacksonville, Florida Southeastern Shipbuilding Corporation		EC-2 Cargo
Savannah, Georgia		Tankers
Sun Shipbuiding and Dry Dock Co	1	EC-2 Cargo
Walsh-Kaiser Company, Inc. (formerly Rheem) Providence, Rhode Island		Tanker
Welding Engineers, Inc	•	C-3 Cargo
Western Pipe & Steel Company San Francisco, California		C-3 Cargo

American Bureau Honored By Ships' Names

When ships are being christened at the rate of more than six daily, the matter becomes a mere routine to which few people pay much atten tion However, the names bestowed on two Liberty ships recently launched at Bethlehem-Fairfield Shipyard Inc., Baltimore, Maryland, are of special interest to all American shipowners. These vessels are the S.S. Stevenson Taylor and the S.S. Charles A. Mc-Allister, launched respectively on the 11th and 12th of May. They were sponsored by Mrs. G. Campbell Taylor, wife of the grandson of Steven son Taylor, and by Mrs. Charles Mc-Allister, widow of the captain

Stevenson Taylor was president of the American Bureau of shipping from 1916 to 1926. In the latter year he relinquished active duties to become Chairman of the Board. Due to his great ability and wise management at that time, the Bureau has now grown to a leading position among the classification societies of the world. Before joining the American Bureau Mr. Taylor had been vice president of W. & A. Fletcher Company and Quintard Iron Works

TANKER FOR THE NAVY

Launching of S. S. Kennebago, one of the great tankers destined for the U. S. Navy, was a family affair at Marinship on May 9, when the charming Mrs. William E. Waste, wife of the yard's general manager, sponsored the ship. Their two sons, William (right) and Jimmie (left), enjoyed the affair as much as their parents.

(Marinship photo)



TOTAL

for almost half a century. A foremost designer of propulsion machinery for side-wheel vessels, an executive and president of Webb Institute of Naval Architecture, a charter member and a member of the Council and a vice president of the Society of Naval Architects and Marine engineers. He was born in New York on February 12, 1848, and died on May 19, 1926.

Captain Charles A. McAllister joined the American Bureau of Shipping as vice president in 1919, and in 1926 was elected president, serving until his death in 1932.

Earning his rank in the United States Coast Guard, which he served from 1892 until 1919, Captain Mc-Allister held the title of Engineerin Chief for 14 years. Previously he had worked in the drawing rooms of the William Cramp & Sons Ship and Engine Building Company and the Newport News Shiphuilding & Dry Dock Company, and at the Bureau of Steam Engineering of the Navy Department. He also was active in the Society of Naval Architects and Marine Engineers, serving as a member of the Council and being elected a vice president in 1927. He also was a trustee of Webb Institute.

Among those attending the launchings were J. Lewis Luckenbach, president of the American Bureau of Shipping, and Mrs. Luckenbach; David Arnott, vice president and chief surveyor of the Bureau, and Mrs. Arnott; Mrs. R. H. Gwaltney, daughter of Mrs. McAllister; G. Campbell Taylor, grandson of the late Stevenson Taylor; and Captain Giles Stedman of the United States Maritime Service.

168 All-Steel Tank Barges

A fleet of 168 all-steel petroleum tank barges, with a total carrying capacity of 1,600,000 barrels, will be constructed immediately for operation on the Mississippi and Ohio Rivers, the Office of Defense Transportation said in announcing major revisions in the nation's big barge construction and conversion program.

The all-steel welded barges have replaced 195 wooden ones on the program authorized last December. It is expected that many of the steel boats will be ready for service by late October, when the 21 river towboats which will haul them are scheduled for delivery.

ODT said work is progressing well on the waterway equipment intended to increase the transportation of oil to the Eastern seaboard. Actual construction is under the direction of the U. S. Army Engineers and the Inland Waterway Corporation.

Other changes in the program include abandonment of plans for a water-rail transshipment terminal at Olmsted, near Cairo, Ill., and reduction of the number of steel dry-cargo barges to be converted to petroleum carriers.

As it stands now, the program calls for:

Construction of 305 wooden and composite (wood and steel) barges, capacity 6000 barrels each; 168 all-steel barges, capacity 9500 barrels each; 100 diesel tugboats of 600 horsepower each; 21 river steam towboats of 2000 horsepower each; water-rail transshipment facilities at Jacksonville and Panama City, Florida; and conversion of 116 dry-cargo steel barges to petroleum carriers, average capacity 10,650 barrels.

Also authorized for construction when needed are 400 wooden cargo barges. Action on these, however, will depend on the need for replacing the steel barges converted to the petroleum trade. ODT officials said a survey is being conducted to determine the need for replacing all, or part, of the 116 barges withdrawn. An early decision was promised.

Riveting Record at Calship

Two new world's championship riveting records were set by crack workers at the California Shipbuilding Corporation when 2001 rivets were driven by each of two five-man teams in approximately five and one-half hours.

Driving V8-inch baldface rivets at the rate of 363.8 per hour, the team headed by Denver H. Spann finished a scant six minutes ahead of the quintet led by W. G. Bolles.

Both teams covered an area of the side shell section of Hull 200—the S. S. Billy Mitchell—20 feet by 80 feet in area, driving from scaffold levels ranging from six to 30 feet in height.

Spann, who led his men on the starboard side of the Liberty ship, has been a riveter for 10 years, and 14 months ago taught the runner-up the art of holding a riveting gun.

Four Naval Ships Launched

Four Navy vessels—two submarines and two "floating workshops," were launched within 43 minutes at the Cramp Shipbuilding Company's yard at Philadelphia on April 18.

It was the first time in the current shipbuilding program for the Navy, and probably the first time in the nation's history, that so many Navy vessels were sent down the ways in one day by a private shipyard along the Delaware River, birthplace of the American Navy.

The submarine Dragonet was the first of the four vessels launched, and was christened by Mrs. John E. Gingrich.

The workshop YR-43 next was launched, sponsored by 12-year-old Elaine Peyton, daughter of Ralph R. Peyton, a machinist at Cramp. Guests then moved to another building way for the launching of the YR-44, sponsored by 8-year-old Jean Veres, daughter of Stephen Veres, a welder.

The fourth launching was that of the submarine Escolar, the sponsor being Mrs. J. Bilosoly Hudgins of Norfolk, Va.





Who's Who ashore

Edited by Jerry Scanlon





Above: B. B. WILLIAMS Below: GORDON LEFEBYRE

Named President of Cooper-Bessemer

Announcement of the election of Gordon Lefebvre to the office of president and general manager of the Cooper-Bessemer Corporation was released following the annual meeting of the board of directors of that company.

Mr. Lefebvre succeeds B. B. Williams, former president, who will remain active in the corporation, continuing his duties as chairman of the board.

In his previous capacity as vice president and general manager of the company, whose two plants are located at Mount Vernon, Ohio, and Grove City, Pa., Mr. Lefebvre had been particularly active in helping the company to reach its present high peak in the production of marine engines for the Navy and Maritime Commission, and stationary power units and compressors used by vital war industries.

The "heroes in dungarees" continue to make marine history. Now it's George B. Allen, chief officer and well-known along the Pacific Coast. Admiral E. S. Land came all the way from Washington to San Francisco to award this hero the Merchant Marine Distinguished Service Medal on behalf of President Roosevelt.

The citation reads for heroism above and beyond the call of duty. The deed of Chief Officer Allen is one of the outstanding feats in the hundreds to date by these men of the merchant service. The citation read:

"A torpedo struck the stern of his ship, demolishing the rudder and propeller, blowing the steering engine through the top of the after house, and wrecking the crew's quarters. He formed a rescue party which, while the ship was sinking, went aft into the wreckage of the crew's quarters below the main deck and carried out five injured men trapped in the wreckage.

"His extraordinary courage and disregard of his own safety in thus rescuing members of his crew will be an enduring inspiration to seamen of the United States Merchant Marine convenience."

Captain Garland Rotch, who served as advisory marine architect for Templeton Crocker in designing the palatial yacht Zaca, now in war service, died in a Palo Alto hospital. He served as a heutenant commander in

World War I, and lived to see the vessel he helped design "enlisted" in the present war, although he himself had been unable again to serve his country.

Capt. William Fisher

The rules make retirement mandatory at the age of 70. So Captain William Fisher has retired as supervising merchant marine inspector for the Coast Guard, 12th Naval District.

But he doesn't feel "70." Neither does he look it, and, moreover, if it were up to him, he would still be at his large desk in the Custom House, supervising merchant marine inspection for the district; overseeing the licensing and certifying of officers, pilots and seamen; investigating marine casualties; checking the licensing of motorboat operators, and carrying on a multitude of other vital wartime duties.

Captain Fisher's job—or jobs went to another veteran of the sea lanes, Captain John P. Tibbetts of Alameda, formerly inspector of hulls and at one time skipper of the liner Ventura.

Even though Captain Fisher has been the master of three ships, and sailed on countless others throughout the world, he has considered San Francisco his home since 1892, when, as the honor graduate at 19 from the New York State School Ship, he reported here as a cadet with the Pacific Mail Steamship Co.

"It was mainly due to my wife's insistence," he smiles, "that I swallowed the anchor in 1912 and gave up sailing for a shore job. In those times we were out from 60 to 70 days and back home for eight."

Captain Fisher probably was the youngest American-born shipmaster of those days. At 35 he was skipper of a 12,000 ton liner.

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The close association and constant companionship remarked by shipping executives between Admiral E. S. Land (left) and Carl W. Flesher during the visit of the Chairman of the United States Maritime Commission last month for Maritime Day to the Pacific Coast is one that has existed since Mr. Flesher was a cadef at Annapolis.

It is no secret that Admiral Land regards his West Coast regional director as one of the outstanding shipbuilding experts in the country.

The transfer of **David Currier**, since 1939 chief inspector for the United States Maritime Commission, with offices first in San Francisco and then in the Oakland headquarters, caused deep regret by his many friends and business associations.

Mr. Currier is now chief inspector in Vancouver, B. C., and is recognized as one of the ablest marine men in the country. A native of New Hampshire, he took his degree in engineering at Brown University. He was connected with the American Bureau of Shipping for many years and was the bureau's representative in Brazil, Uruguay and Argentina. During World War I Mr. Currier was with the United States Shipping Board and held many important posts in the construction division. He was later with the Norway Pacific Drydock Company in Seattle.

Joseph S. Wilson is now assistant regional director of the U. S. Maritime Commission, it was announced by Carl W. Flesher, regional director on the West Coast.

Mr. Wilson, an attorney, was at one time affiliated with the Wilson Line, and also served as president of the Bellanca Aircraft Company.

The appointment was to assist Mr. Flesher in the mounting duties and responsibilities developing as the region under his supervision has, in the first four months of 1943, contributed an average of 50 per cent of the total national tonnage output. Mr. Wilson makes his office in the Maritime Commission headquarters in Oakland,

Jay Murphy, chief of the War Shipping Administration in Hawaii, and formerly representative of the American President Lines in Honolulu, is a San Francisco visitor, conferring with John E. Cushing, deputy assistant.

One of the highest ranks attained by a steamship official has been conferred on John M. Franklin, former president of the United States Lines. The Senate confirmed his elevation to a brigadier-general from colonel. He was one of the first of the marine executives commandeered for service. He is now chief of the water division of the Transportation Corps, Army Service Forces, and is stationed in Washington. He is the son of the late P. A. S. Franklin, one of the country's ablest maritime leaders, who contributed so much to the nation's success in the last war.

J. Ward Mailliard is the new president of the California State Board of Harbor Commissioners, San Francisco. He succeeded Joseph F. Marias. Appointment was made by Governor Warren, who named Thomas Coaskley, an attorney, and W. G. Welt, a representative of the Railroad Brotherhood, to succeed Commissioners Harry See and George Sehlmeyer. Mr. Mailliard was at one time president of the San Francisco Chamber of Commerce.

Captain Haakon A. Pederson, 52, skipper for the United States Lines, who was believed dead when his ship was sunk by a Jap submarine, is alive and a prisoner in a Nipponese camp. Relatives had mourned the death of Capt. Pederson as well as seventeen of his crew. The latter are also prisoners.

The U. S. Lines had awarded "posthumously" a Distinguished Service Medal to Capt. Pederson. He is well known on the Pacific Coast, having sailed here as mate and master before the war.

Admiral Emory S. Land, chairman of the U. S. Maritime Commission, upon his arrival in San Francisco to be the principal speaker at a Maritime Day luncheon, said that America's post-war merchant marine program is to have the best ships in the world and as many of them as any other nation. A stimulating statement from such a reliable authority to the youth who have chosen various

branches of the American merchant marine as their career,

Kenneth H. Finnesey, former steamship company executive, in the U. S. Army transport service at the San Francisco Port of Embarkation since last May, is now a major. He was recently elevated from a captaincy for meritorius service:

Pacific Coast friends of Commander Bennett M. Dodson were pleased with the news he had been elevated from lieutenant commander and appointed superintendent of the new United States Marine Basic Training School at Pass Christian, Miss.

Commander Dodson is remembered as executive officer of the California State Schoolship under Captain Mayo. He is one of the youngest men to hold this rank and post under WSA.

The passing of Paul Selleck, for ten years with the Furness Line, Los Angeles, after a three-month's illness, was reported with regret by his business associates.

Frank J. O'Connor, one of the bestknown and highly-respected shipping men on the West Coast, has been added to the directorship of the American President Lines, Dr. Henry F. Grady, president, announced.

Mr. O'Connor needs little introduction to shipping men. He is California manager of the Donovan Lumber Co.; was for fifteen years president of the Shipowners Association

FRANK J. O'CONNOR



of the Pacific Coast and was a former charman of the matine committee of the San Francisco Chamber of Commerce, as well as having served for two years as president and general manager of the California Wholesale Lumber Association

J. H. Lofland, United States coordinator of ship repair and conversion, with headquarters in New York, made an inspection tour of Pacific Coast yards the latter part of May, and his itinerary included spending at least ten days in June in this area before returning East. West Coast yards lead the nation in production and are well to the front in conversion and repairs, records show.

Thomas F. Baker, 63, vice president of Wessel, Duval & Co., steamship agents and owner of the West Coast Line, passed away on May 19 in New York.

Ronald Miller, formerly chief engineer on various Matson ships, is now a lieutenant commander in the Navy and is on sea duty.

Henry R. Rettig, formerly first assistant engineer on the S.S. Hawaiian Merchant, is now War Shipping Administration representative in Brisbane. John E. Flanagan, formerly engmeer on the S.S. Kohala, is stationed at Melbourne as WSA Marine Superintendent; and William C. Canty, ex-chief officer of the S.S. Hawaiian Planter, is with the WSA at Townsville, Australia. These men and their respective war duties were reported by Ralph H. Chandler, Southern California manager for Matson, who recently returned from a 25,000 mile trip to the Antipodes and islands in the South Pacific

Dave Bender is on leave from Matson Navigation to become attached to the Office of the Coordinator of Ship Repairs for the Army and Navy in the San Francisco headquarters.

Joe Hurd, general agent in Los Angeles for the Matson Navigation Co., for the last 20 years with this concern, has resigned and joined Alexander & Baldwin. He served as purser on the liners Lurline, Matsonia and Manoa during his career with Matson, and also in their London offices.

Col. Thomas G. Plant, home from the South Pean after more than a year's service, is to spend some time in this country. He is an leave from his post as the prosteint of the American Hawaran. He was one of the first steamship executives to be called into service when the war started.

Franklin J. Waugh, tormerly with Swayne & Hoyt, has been advanced to a heutenant commander from heutenant, USN. He is attached to the Port Director's Office, San Francisco.

The many triends of Captain John A. Mattson, master of the Coast Farmer of the Coastwise Line, are congratulating the heroic skipper on his being awarded the Merchant Marine Distinguished Service Medal for "extraordinary leadership and outstanding seamanship while delivering vital war supplies in the Southwest Pacific."

To take the post of assistant general manager of the Luckenbach Steamship Company under General Manager James Sinclair, Henry F. Markwalter resigned as marine operating manager and adviser for the War Shipping Administration.

Douglas P. Faulkner, national director of the United Seamen's Service, has checked available sites for larger quarters for a seaman's home for their housing and recreation, similar to the Mills Estate, donated to the USS for the San Pedro area. It is expected that a choice will be made and placed for the board of directors shortly.

Elected President of Farrel-Birmingham

Farrel-Birmingham Company, Inc., of Ansonia, Conn., and Buffalo, N.Y., announce the election of John Wolcott Haddock as president. He assumed his new duties on May 1

Mr. Haddock was formerly vice president of the Sullivan Machinery Company of Claremont, N.H., and Michigan City, Ind. He is a member of the American Institute of Mining and Metallurgical Engineers: a member of Army Ordnance Association: and is active in the affairs of the Compressed Air Institute and the American Mining Congress, having



JOHN W. HADDOCK
(Photo Ly George Vehidof Studio, Chicago)

been chairman of the Manufacturers' Division of the Congress during the past year.

Commander F. W. Leahy, U.S. C.G.R., aide to Rear Admiral E. D. Jones, U.S.C.G., San Francisco, has been transferred to Pittsburgh, Pa., as Section Commander in charge of all Coast Guard activities in that area. Commander Leahy is a native of San Francisco and is well known in Pacific Coast Marine circles.

JOHN ANDERTON,
Marinship engineer, is one of the most
popular executives in the Bay area ship
construction world.



MARINE DEPARTMENT
A E T N A I N S U R A N C E C O.
Q U E E N I N S U R A N C E C O.
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SHIPY ARD PROBLEMS

(Continued from page 79)

ing and figures would allow many reprints without seriously affecting the legibility of the print. The addition of an isometric view or a photograph of the section or object covered by the drawing would aid the visualization of the subject.

Experience with ship construction and ship blueprints eventually clarifies most difficulties of blueprint reading but the maximum value of otherwise capable shipbuilders is not utilized until this experience is acquired. Improvement and simplification of blueprints will reduce the time necessary to gain this experience which directly affects the quality and quantity of production in the shipbuilding industry.

MANPOWER and SUPERVISION

By Edward L. Baron Machinist Leaderman Bethlehem Steel Corporation

The manpower problem in the shipyards is becoming more acute daily. The Army and Navy are taking their quotas in ever increasing numbers with no end in sight. In contrast, ships that have been in constant use since Pearl Harbor are now sorely in need of repairs, war vessels that have seen action must have their wounds healed, and ships that have been sent to the bottom must be replaced by the hulls now on the ways and in the blue print stage.

Where is this needed manpower coming from? From the ranks of the inexperienced is our only solution. The stock broker, the banker, the ribbon clerk and the office worker must be made to realize that this is war, total war, and that his place is backing the man who is firing the gun, by helping to build the ships which will keep the sea lanes open, so that food and the munitions of war can be kept going in an uninterrupted stream to our men and Allies.

Upon those in supervisory capacities must fall the responsibility of training these men. They must be competent, patient and understand human nature. They must have the ability to teach these men the fundamentals of blue print reading as well as the use of tools. They should be able to draw sketches of the work being assigned so that the less experienced men can understand instructions more readily. They must be able quickly to recognize the individual's aptitudes and place him with the mechanic charged with that particular phase of the work. They must be able to plan their work ahead so that there will be a minimum of lost time. Precious man-hours gained may save a life at the front. They must have some knowledge of record keeping to avoid waste caused by duplication. In short, the successful supervisor must be a teacher, purchasing agent, bookkeeper, draftsman and psychologist.

This sounds highly complicated, but the Federal Government, in cooperation with the many shipyards, has made courses available to the ambitious man; company libraries have been opened for the first time; and interdepartmental cooperation has increased his ability to be of greater use for our war efforts. These facilities, added to his experience and trained intelligence, should make his tasks easier and more pleasant, as well as an indispensible cog in the machinery of war production, and engender a feeling of personal pride in his part of the ultimate victory.

Famous Four Master's Power Plant

(Continued from page 64)

equipment model PA605, completes the picture.

Installation Layout

All of the foregoing equipment was installed in the vessel at the plant of and by General Engineering & Dry Dock Co. of Alameda, Calif. Those who have had the privilege of seeing the engine room layout have marveled not only at the spaciousness provided but also at the clean and efficient layout of the interconnecting piping, valves, etc. While each engine is a separate unit in itself, the entire piping layout has been so designed for cross-connection in event of emergency that no occasion may occur when any unit will be forced to stop through lack of fuel oil, air, circulating water or lube oil, since half of the entire supply system can be cut off and both engines operate on the other half.

A particular feature of the installation is the type of "seating" installed by the General Engineering, whereby all the propulsion machinery becomes a direct part of the hull. On the trial trip there was no vibration apparent at any time.

The system of shafting and spring bearings installed in the vessel is such as to be immediately accessible for inspection, and, of course, to maintain perfect alignment. The capacity of the fuel tanks is 92,000 gallons.

Under present circumstances, it is not possible to give the results of the speed trial. Suffice it to say, however, that the actual speed clocked over a measured course was almost 50 per cent in excess of that estimated by the engineers of both Atlas and General Engineering. While the results of a sea trip, when the vessel finally leaves San Francisco to return to its own country, cannot be predicted, enough evidence is on hand to show clearly that such a splendid installation of American products made by American firms will go far toward maintaining fine and open relations between our good Chilean neighbors and ourselves.

LUNNING

Edited by Bernard DeRochie



Happy Voyage, Frank!

Hough & Egbert announces the association with their firm of Frank H. De Pue, effective as of July 1, 1943 Mr. De Pue joins this firm with over twenty-five years' experience with the Moore Dry Dock in the capacity of sales manager special izing on repairs and conversion work. The firm of Hough & Egbert are the representatives of Walter Kidde Co. of New York, manufacturers of the Lux System, Rich Audio, Zonite and Selex systems for fire detection and extinguishing for marine, industrial and aviation application. They also represent the American Engineering



FRANK DE PUE

Co. of Philadelphia, manufacturers of the Heale Shaw pumps, anchor windlasses, winches, steering gears and capstans; Lane Life Boat & Davit Co., manufacturers of lifeboats, Schat patent davits and boat skates; Bureau of Veritas International Register of Shipping. Hough & Egbert for many years have manufactured the Hough Feed Check Valve, which is extensively used in United States and Great Britain. The Industrial Fire & Marine Protection Co., Inc., is also a subsidiary of Hough & Egbert, and this company has been doing a great deal of work in servicing of Lux &

Rich Audio Systems, which are in stalled in nearly all vessels built for the United States Maritime Commission

Frank De Pue is the popular new president of the colorful Mariners Club of California, where he admin sters the functions of this salty group in true shipshape fashion. He brings to his new post a quarter of a century's training and background in marine surveying and engineering and his countless friends throughout the maritime districts of California will wish him Happy Voyage!

George Swett Firm Appointed

George E. Swett & Company of San Francisco have been appointed distributors for the Paxton-Mitchell Company of Omaha, Nebraska. The company manufactures P-M Metallic Packing for Reciprocating Rods and Bronze and Cast Iron Liners for Engines and Pumps.

A complete stock of Packing and other products will be carried at their San Francisco warehouse, according to George E. Swett, for prompt delivery to users in this section.

Cleveland Diesel Opens S. F. Office

A Pacific Coast service office at San Francisco has been established during June by the Cleveland Diesel Engine Division of General Motors Corporation for servicing marine diesels of the company's manufacture.

Chas. C. Cheevers has been placed in charge of the offices as service manager, with T. L. Meckbach as office manager. The new quarters are located at 111 Sutter Street.

First Mate George B. Allen of Oakland was awarded a distinguished service medal for heroism at sea in the service of the United States Merchant Marine at the presentation made by Admiral Emory S. Land, Chairman of the Maritime Commission and War Shipping Administrator, at the Maritime Day luncheon in San Francisco

Propellers At Los Angeles

The annual meeting of Propeller Club, Port of Los Angeles-Long Beach, will be held at the Virginia Country Club, Long Beach, Wednesday, June 39, at 12 noon

The speaker will be honorary member, Rear Admiral Marshall, who will comment on the war situation

One of the important pieces of business to be transacted at this annual meeting will be the election of officers for the ensuing year and of six members of the Board of Governors for a three-year term.

The nominating committee appointed by President E. M. Wilson met on the afternoon of May 28. The names of the men proposed for governors and officers to be elected at the next annual meeting are:

For the three-year term (expiring 1946): Messrs. Eloi J. Amar, port manager Long Beach Harbor Department; Leo E. Archer, manager Moore-McCormack Lines: Harold A. Black, attorney, member of firm McCutcheon, Olney, Mannon & Greene; Ralph J. Chandler, Southern California manager Matson Navigation Co.; Herbert E. Pickering, partner W. H. Wickersham & Company; W. Kenneth Pope, vice president and Southwest manager Pope & Talbot, Inc.

For officers the following gentlemen were proposed:

For one-year term (expiring 1944): president: Mr. Max G. Linder, president Transmarine Navigation Company; first vice president: Mr. Lee K. Vermille, attorney, member of firm Overton, Lyman and Plumb; second vice president: Mr. Daniel Dobler, superintendent Pacific Coast Division Marine Department, Texas Company; third vice president: Mr. James G. Craig, treasurer Craig Shipbuilding Company; secretary - treasurer: Mr. Hugh Middleton, district manager De La Rama Steamship Line.



Bilge Club Holds Election Party

IFACING PAGEL

- 1. The Election Committee goes to work. Left to right: Joe Nichols, chairman; John Zan-ella, E. R. Nelson, Gordon McCorkell, H. McMullan.
- A plain case of coercion. Left to right: A. Jorgensen, B. B. Lippman, Hugh Middleton, Sam Cappelle.
- 3. The Board of Directors likes comfortable chairs. They are J. M. Costello, new president; E. J. McKee, Duke Decker, sometimes known as "Flat Foot," T. W. Buckholz, John Marshall, Ed Ryan, the "Flying Seaman."
- Marshall, Ed Ryan, the "Flying Seaman."

 4. Looks like the boys at the top table would get it worked out all right. They are: Capt. T. W. Peters, John Eidom, Jack Mulseed, Art Pegg, Tom Forster. Below: J. W. Buckholz heaves a sigh, John Marshall is amused, Ed Ryan is not quite sure, John Nelson looks doubtful, J. M. Costello sees the dawn, while A. Boro (alias: "Donkey!") and Wind Rash say: "Oh well—!"

Looks like Jack Mulseed, Art Pegg and Tom Forster enjoyed that one.

Floyd Moore, T. W. Peters and John Eidom seemed to like the calories in the Bilge.

- seemed to like the Calories in the Bilge.

 7. The sextette at the speakers' table range, from left to right, as Floyd Moore, T. W. Peters, John Eldom, Jack Mulseed, Art Pegg and Tom Forster. Out in front the boys who are laughling because they didn't have to use their own ration coupons are Jim Tyler, Joe Leveque and C. Crawford, Log repre-
- sentative.

 8. "A bunch of the boys were whooping it up—" while T. W. Buckholz consoles Jim Buntin because he forgot to renew his subscription to the PACIFIC MARINE REVIEW. They are, left to right: William Hurchinson, unidentified, Capt. William Anderson, Hal Borwin, T. W. Buckholz, Jim Buntin, W. Cyrus, unidentified, Capt Maribita, Joe Nichols and William Dohrmann.
- J. M. Costello, new president, takes over from T. W. Peters, retiring president, while John Eidom, a past president, smiles ap-

The three presidents, past, present and fu-ture. Retiring Peters is caught by incoming Costello as past Eidom referees.

Joseph M Costello was elected President of The Bilge Club for the coming year The elevation of "loc" to the top chair took place when the annual meeting and election of offi cers was held May 4th at the Pacific Coast Club in Long Beach. The or ganization's 280 active members were well represented at the meeting.

Three Directors were re-elected, namely: T. W. Buckholz, Captain E L. Ryan and John E. Marshall,

To the Board of Directors were added three new officers, E. J. Mc Kee, Earl Archibald and R W Decker.

With appropriate ceremony, Retiring President "Cap" T. W. Peters, Marine Superintendent of the Standard Oil Company of California, turned over the Bilgers helm to incoming-president Joe Costello, he of unlimited energy and dash.

Acclaim greeted the announcement that Saturday, June 26th has been set as the big day for The Bilge Club's Annual Barbecue and Golf Tournament, the place-Palos Verdes Country Club, San Pedro.

MARINER'S CLUB

Corporal George F. Arm, of the of the Marmes, talked to The Marmer's Club on Wednesday, June 2nd

A fighting man who spent five and a half gruelling months in the South Pacific theater of action, during those indescribable months when the U.S. M.C. made the first invasion attack practically unassisted, Corporal Arm told a straightforward eye-witness account, which electrified his audience. This scribe joined those who lingered on for a close-up talk with the guest speaker. All of us came away strongly convinced that, despite any and all sacrifices which the home



front is called upon to make, a greater effort to provide the fighting tools for the boys in the fox-holes is an infinitesimally small contribution when measured with their indomitable courage.

We salute the corporal for his gallant deeds and for his inspiring cour-

Mariner's Club president, Frank De Pue, introduced the speaker and presided over an exceptionally fine meeting, which was well attended by representative shipbuilding and operating men.

NEW YORK PROPELLERS

Right: In attendance at Twenty-first Annual Dinner of the Propeller Club of the United States, Port of New York, observance of National Maritime Day at the Hotel Waldorf-Astoria, May 22,

the Hotel Woldorf-Astoria, May 22, 1943.
Reading left to right:
Arthur M. Tode, Honorary President,
Propeller Club of the United States.
Benn Barber, Water man Steamship
Agency and Past President, Propeller
Club, Port of New York.
Use President, Propeller Club, Port of New York.
Harry Parsons, Parsons Refractories Co.,
Past President, Propeller Club, Port of New York.
Captain Edward Macauley, U.S.N., Rtd.,
Deputy Administrator, War Shipping Administration,
Marchael McCormack, Moore-McCormack Lines, Past President, Propeller
Club, Port of New York.
O. B. Whitaker, Manager, Marine &
Rederal Depts, The Sperry Gyroscope
Co., and President, Propeller Club, Port of New York.
Everett F. Clark, Westinghouse Electric
Everett F. Clark, Westinghouse Electric
Club, Port of New York.



Western Pipe & Steel

Awarded Honors

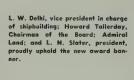


Admiral Emory S. Land.

On Sunday, May 23rd, Western Pipe & Steel Company received United States Maritime Commission recognition, by the award of the Maritime "M" Pennant, the Victory Fleet Flag, Maritime Merit Badges, bestowed by America's top man of shipbuilding, Rear Admiral Emory S. Land. The locale for the colorful event was the South San Francisco yard of these builders, where a vast

audience of management and employees, Maritime Commission and other notables watched the raising of newly-awarded emblems to the yard's masthead.

PMR's views show the highlights of the afternoon's ceremonies, which featured the side-launching of the Sea Devil and the presentation of service-emblems to honored employees.





Below: Receiving Merit Badges were (left to right): William Farmer, Tony Texiera, Frank Bosworth, L. J. Bloom, Harvey Clarke and E. M. Durfee—bestowed by Admiral Land (extreme right).





Above: On the launching platform— Lleut. W. C. Peet, secretary, U. S. Maritime Commission, Washington, D. C.; Carl Flesher, Regional Directer of the U. S. M. C.; sponsor Mrs. Maxwell McNutt, and Admiral Land.



Below: The Sea Devil makes a graceful side launching picture with Mrs. McNutt sending her on the way with an inspiring splash!







Dedication of the plaque honoring heroic merchant seamen at the time-honored Marine Exchange in Son Francisco was Admiral Land's first assignment on a busy Maritime Day observation. The memento was donated by the United Seamen's Service. Upper view shows daughters of honored seamen. Followed the big luncheon at the Commercial Club, where San Francisco's own Vice Admiral John W. Greenslade introduced the U. S. Maritime Commission chairman as guest speaker.

Admiral Emory

The San Francisco Bay area had the good fortune of welcoming Chairman of the United States Maritime Commission, Rear Admiral Emory S. Land, as honored guest for the observance of National Maritime Day.

With several organizations joining as co-sponsors, the time-table of the distinguished visitor was set at full-speed ahead, with well planned events following one after the other. Chronologically:

Admiral Land dedicated the memento plaque, honoring our heroic merchant marines, at 11:45 a.m. at

the Marine Exchange.

At noon, a capacity audience assembled by the Propeller Club of the United States, Port of San Francisco, the Senior and Junior departments of the San Francisco Chamber of Commerce and the Foreign Trade Association listened to a soul-stirring talk by Commissioner Land, in the huge dining room of the San Francisco Commercial Club. The guest speaker was introduced by Rear Admiral John W. Greenslade, who made interesting comments on "Jerry" Land's career. Abstract of the principal talk appears as PMR's leading editorial in this issue.

A press conference followed the luncheon-program, from which Admiral Land was convoyed to the Permanente Yard at Richmond, where the program included a mass assem-

bly of all hands and the launching of the Gen. Robert Howze.

A survey of the Richmond tugboat Admiral Land followed, with the official party coming aboard for the inspection.

On the evening of the same day, the Propeller Club's formal dinner-dance paid honor to our guest from Washington, D. C. About three hundred Propeller members, with their ladies, enjoyed the beautifully arranged event and our compliments go out to Byron A. Pickard, general chairman; Carroll Reeves, chairman of arrangements; Eugene Hoffman, the club's efficient secretary and to all their aides. Present were leading shipbuilding executives of the San Francisco and Oakland area. Official host was Hugh Gallagher, president of the Propeller Port of San Francisco.

A memorable part of Admiral Land's busy calendar was his journey down the peninsula to Sunnyvale, where Charles E. Moore, president of Joshua Hendy Iron Works, conducted him through the new shops now hitting a lively tempo on the construction of turbines. Here again, Admiral Land was given the opportunity of addressing workers of the war program.

On Sunday afternoon, the launching of the Sea Devil and the award
(Continued on page 106)



S. Land Visits the Coast



Propeller Club, Port of San Francisco, made a fitting climax to the Maritime Day celebration. In the upper view is seen Propeller Club President Hugh Gallagher (left center). Admiral Land appears at the right.

A formal dinner-dance arranged by the

The second view is another glimpse of the guest table.

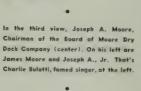


Admiral Land (above) addressing

the assembled workers at the Joshua

Hendy Iron Works plant in Sunny-

In the lower photo: A. S. Gunn, Bethlehem's vice president (center, facing you); Chas. E. Moore at extreme left; Capt. C. O. Kell, Shipbuilding Supervisor of the Navy (right center), and Howard Tallerday of Western Pipe & Steel (extreme right).











NATIONAL MARITIME DAY OBSERVATION



Left: A partial view of the huge audience at the Saturday noontime luncheon sponsored by the Propeller Club, San Francisco, the Senior and Junior Chambers of Commerce and Foreign Trade Association.



Above: At Sunnyvale, Admiral Land gave an inspiring "Well done!" to the management and workers of the Joshua Hendy plant.

Second view shows President Charles E. Moore responding to the richly-deserved honors in behalf of his fellow-workers.

In the lower two views, President Moore is proudly explaining the Hendy plant's remarkable progress in building turbines, while Carl Flesher and Admiral Land listen approvingly.



Above: Norris Nash of the Richmond Shipyard's public relations division gives the distinguished visitor the "go ahead" signal. Carl Flesher smiles at the formality.

Below: Richmond Shipyards honored the Commissioner's visit by launching the General Robert L. Howze. Admiral Land microphoned a message to thousands of workers, congratulating them on their exceptional record and bespeaking a sincere "Keep it up!" Earlier the same week, the Matthew Brady was launched.



Mrs. Carl W. Flesher (center); at her right Mrs. Henry J. Kaiser; at extreme left Mrs. Fulton Lewis, Jr., sponsor of the Matthew Brady. The clergyman is Bishop Noel Porter. At his left are Clay P. Bedford, shipbuilding manager of Richmond Shipyards, and Fulton Lewis, Jr., the noted news analyst.





At Marinship

Left: Henry Kaiser appears with Mrs. and Mrs. Futhon Lewis, Jr., at the Matthew Brady launching. The other three photos were taken at the Admiral Land ceremonies when Lt. Cal. Royal Griffin, T.C., Carl W. Flesher, Clay P. Bedford and Admiral Land were speakers at the General Robert L. Howse christening, Mrs. William C. Gardenhire was the sponsor; Mrs. Robin Skelley, matron of honor.

Right: Following the admiral around Marinship.





Left: Again at Sausalito: Stephen Bechtel, Carl W. Flesher, Kenneth K. Bechtel, Admiral Land and W. E. Waste.

New Harbor Commissioners

A luncheon in welcome to California's new State Board of Harbor Commissioners, who are to administer San Francisco's port affairs, was held at the Commercial Club on Monday, June 7.

Honoring the men who are responsible for wartime management and post-war planning in this strategic

of the United States at San Francisco, theater of action, The Propeller Club the San Francisco Chamber of Commerce, the Marine Exchange, the Foreign Trade Association and the city's Junior Chamber were joint sponsors bidding Godspeed to new President J. W. Maillard, Jr., and to his fellow commissioners, Thomas Coakley and W. G. Welt.



E. HAROLD BIDDISON

Carswell Marine Associates, Inc., Marine Machinery, Lifeboats and Davits, 15 Park Row, New York. Messrs, Hines and DeRochie, Pacific Marine Review, San Francisco.

Dear Fellow San Franciscans:

I can almost address you as such, as I have decided to open an office in San Francisco. It will be located at 417 Market Street, and under the direction of E. Harold Biddison, who is sitting alongside of me now but leaves about June 11 for the west coast. The office will start functioning the middle of June. We are arranging to share a suite of offices at the above mentioned address with the Cargoaire Engineering Corp., represented by Lawrence E. Dake.

The office will be in the name of the Carswell Marine Associates, Inc., who are the Marine Department for the following:

The Landley Co., Inc.-Davits and boat winches.

Gifford-Wood Company—Material handling equipment, structural steel products, small forgings.

Colvin-Slocum Boats, Inc. - Lifeboats, rafts, buoyant equipment.

Lake Shore Engineering Co.-Electric cargo winches.

Ulster Foundry Corp. - Handpower deck machinery, bitts, cleats, chocks and fittings.

Catskill Metal Works, Inc.—Sheet metal and machine products, iron, brass and aluminum castings.

In addition, Mr. Biddison will be my personal representative to assist in handling the marine work of the McKiernan-Terry Corporation.

With best regards to you both, I

Very truly yours, J. S. Carswell, President.

Production Awards

Owing to Government paper to strictions, we regret very much that we cannot give as much space to Army Navy "E" and Maritime "M" Awards as has heretofore been our privilege Starting with this issue, our coverage of these inspiring cere monies will necessarily be curtailed to a brief mention of the firm, location, award and date

Owens-Corning Fiberglas Corporation, Newark, Ohio, and Ashton, R. L., plants. Army-Navy renewals awarded on March 25.

Seattle-Tacoma Shipbuilding Corporation, Seattle (Wash.) Division. Second star for Army-Navy flag awarded on April 3.

Trill Indicator Company, Corry (Pa.) Plant. Maritime "M" Award on April 9.

Jeffersonville Boat and Machine Company, Jeffersonville, Indiana. Army-Navy "E" on April 18.

Hedges-Walsh-Weidner Division of Combustion Engineering Company, Inc., Chattanooga. Gold Star for "M" pennant on April 22.

Todd Erie Basin Dry Docks Inc., Brooklyn Division of Todd Shipyards Corp. Maritime Commission "M" Award, Victory Fleet Flag and Employees' Merit Badges on April 26.

Fulton Shipyard, Antioch, Calif. Second consecutive renewal of "E" flag on April 27.

Nordberg Mfg. Co., Milwaukee, Wis. Maritime "M" Pennant, Victory Fleet Flag and Maritime Merit Badges on May 17.

Stewart-Warner Corp., Chicago, Ill. Second "E" Award on May 26.

Remler Company, Ltd., San Francisco, Calif. Star for Army-Navy Flag.

Ward Leonard Electric Co., Mt. Vernon, N.Y. Army-Navy renewal.

Presenteeism in a War Plant

Abandoning the negative approach for the positive, Western Gear Works, Seattle, is stressing presenteeism, and records are being set. The April attendance was 95.6%; during the first 20 days of May, 96.4%. Daily records of 100% presenteeism are frequently in effect on the various shifts.

"The attendance record established is a noteworthy contribution to the war effort," points out Capt. L. J. Stecher, U. S. N., district inspector of naval material. "It speaks for the high degree of morale among these (Page 107, please)



FTER months of routine the great moment comes for the gun crew aboard a merchant vessel. The enemy is sighted... the call to battle stations sounds out over the loudspeakers and the men spring to action for a crack at the foe. Day in and day out, in situations less dramatic but equally important to smooth efficiency, communication and announcing systems co-ordinate activities aboard many types of vessels. • Remler systems are built to meet rigid specifications by a firm engaged in the manufacture of marine communication equipment since 1918. These systems are ruggedly constructed to withstand concussion, vibration and the deteriorating effect of salt air and water. • Remler is proud of its assignment to furnish this type of equipment to the U. S. Navy and the U. S. Maritime

REMLER COMPANY, LTD. . 2101 Bryant St. . San Francisco, Calif.

Commission.

REMLER

Announcing & Communication Equipment

ELECTRICAL PLUGS AND CONNECTORS



At Swan Island



Aboard his namesake, the U. S. M. C. tug Admiral Land, the noted visitor smiles proudly,

of the Maritime "M" and other honors to the Western Pipe and Steel Company proved inspiring events.

The Bechtel, organization at Marinship had the pleasure of welcoming the Maritime Commission party at Sausalito during the three-day in spection tour. Hosts at the yard in cluded Stephen Bechtel, Kenneth Bechtel, and William E. Waste, Marinship executives.

As we go to press, first photos are arriving from Portland, indicating

During the launching of the S. S. River Raisin, Hull 15. "'M" pennant award was presented by Admiral Land. Left to right: Swan Island guard; Edgar F. Kaiser, vice president and general manager; Admiral Land; Robert Nieman, assistant general manager, Kaiser Company, Inc.; Mrs. David Temple, spansor; John A. Bruns, United States Maritime Commission, principal hull inspector; Mrs. Carl Turner, matron of honor; Miss Verna Temple, matron of honor, and David A. Temple, welder.

that the Swan Island yard of Kaiser Company, Inc., staged a gala reception of America's shipbuilding chief.

General conclusion of those of us who "watched and listened" at the events mentioned in this chronicling, is that America's shipbuilding program is clicking at a most satisfying pace, that Coast yards are more than keeping in step and that post-war problems of the industry are receiving vigilant study.

A feature of the day was the launching of the S. S. River Raisin, sponsored by Mrs. David A. Temple, welder's helper at Swam Island and wife of David A. Temple, welder. Admiral Land appears in the center.

Page 106

workers a work to win the war at titude which will serve as a stimulating example to other war workers."

One of the features of this successful personnel plan is a chart posted beside the time clock, showing how the various shifts line up in daily attendance. The chart was created from a bond winning suggestion turned in by the head timekeeper, Howard Clow. Each shift is denoted by a given color, and daily his line is extended upward or downward in accordance with the records.

Beside the chart are the names of workers who are absent without leave. Naturally, workers do not want their names to appear under the

A.W.O.L. designation.
All A.W.O.L. workers are followed up immediately with calls, telephone or personal. If telephone connection cannot be established, a personal call is made by the company nurse. Also, the personnel manager, W. M. Ewing, will have a personal chat with the worker when he returns to his job. New workers, in particular, respond to such personalized contact, it works out in experience. For instance, there was the new worker who explained that he



Charles F. Bannan, secretary of Western Gear Works, Seattle, points to the zero which shows that no employees are A.W.O.L., while Capt. L. J. Stecher, U. S. N., approves of the record as a way to help win the war. At right, W. M. Ewing, personnel manager.

didn't think he'd be missed!

This system is backgrounded by that intangible factor, "high morale," which translates into the tangible in near-perfect attendance records.

There are many contributing causes to this situation, notably the fine relationship which exists between the management and the employees. Dinner meetings at which the executives and department manager freely discuss current problems are frequent. New key men and changes in per-

sonnel are introduced at such meet-

When the plant was awarded the Army-Navy "E" for outstanding war work, Thomas J. Bannan, executive vice-president, made it an occasion for inviting the families of all workers to the plant for a family luncheon and program preceding the ceremony. Families of workers were given an opportunity to tour the plant, and see their kin at work, directly after the intimate family gathering.



Official U.S. Navy Photo

HOISTS

DECK WINCHES MANUFACTURING COMPANY

Main Office and Works ELIZABETH, NEW JERSEY

Builders of Fine Hoisting Machinery for Over 68 Years

CAPSTANS
TOWING

Page 107

Above: Two-inch salt water sanitary line, upper deck ceiling.

Below: Three-inch and 4-inch bilge and



Piping installed on ships has a hard life. While the ship is in motion at see it is constantly subject to weaving and other misalignment strains. While she is in port, a careless long-shoreman may dump on them a three-ton sling load. While they are being installed, a husky pipe-fitter pries them into position and clamps them there with a strain in every fiber.

In modern shipyard pipe shops, using modern methods, many of the difficulties of piping at sea are eliminated by the use of a type of pipe coupling new in the marine field. This coupling, known as the Rolagrip, is a very simple and very effective device which saves cost, saves installation time, and saves space as compared with flange couplings.

THE NEW

MARINE PIPE JOINT

The Rolagrip coupling is composed of three main parts, and the bolts and nuts which fasten them together. A leak-proof, enduring seal is effected by means of a synthetic rubber composition ring, molded with a wide reentrant groove on its inner diameter so that two tapering "lips" are formed which contact the outer surface of the adjacent pipe ends. Over this sealing ring, and completely enclosing it, fits the housing, composed of two duplicate corrosion-resistant, malleable iron castings forming a split clamp which covers the entire joint. Recessed into the bearing surface of this housing are small, case hardened steel rollers with a sharp toothed surface, and by a caming design of the recess in which they fit, grip the pipe with tremendous force when it is subjected to excess pressures or end tension pull. Two special alloy steel bolts fitted with special long nuts are used to secure the two halves of the clamp.

The sealing ring is molded to fit standard pipe diameters and the clamp is finished to close tolerances for the outside diameters of both ring and pipe. No preparation of pipe is necessary for the use of these couplings except to remove any burrs or deep scratches at the seating of the sealing ring.

Many of the shipyards are using these couplings extensively, both on merchant and naval ships, and their experience shows the following advantages:

- (1) An assured dependable perfect seal.
- (2) Time and cost of threading or welding eliminated.

- (3) Lighter weight pipe can be used because complete wall thickness is retained.
- (4) Quick installation without skilled labor and without special tools.
- (5) Sufficient free movement for expansion and contraction.
- (6) Average deflection of 5° without disturbing seals.
- (7) Pipe leaks can be cut out and short lengths of pipe immediately coupled in.
- (8) Couplings are 100% reclaimable.

These couplings are in stock for pressures up to 1000 psi and temperatures of 175° F. for oil, water (fresh and salt), air, or brine. They may be used with equal success on either plain or beveled end pipe.

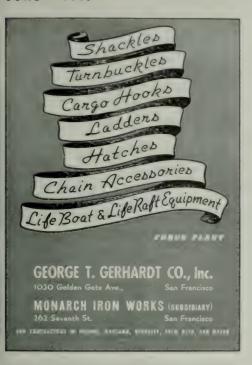
Thousands of the couplings have been in use for periods covering many round voyages of war supply ships, and the satisfactory performance of this product has made it possible for many shipyards to continue to order these couplings.

The couplings are manufactured by Gustin-Bacon Manufacturing Company, Kansas City, Missouri. Harry M. Green, manager, Pacific Coast Division, located at 111 Sutter Street, San Francisco, California, will be glad to provide additional information on this coupling, which may assist in solving piping problems.

Left: Six-inch fuel lines in boiler room. Right: Three-inch and 4-inch bilge and ballast lines. Note couplings at bulkhead.









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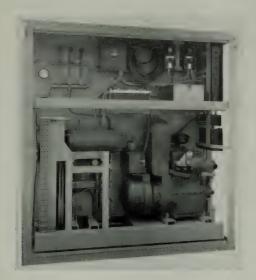
Meet A. S. A. Standards B 16c, 1939 and A. P. I. specifications.





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Refrigerated Carriers Preserve Fighting Foods

Type H portable refrigerator carries gasoline engine for power, but may he operated by ac or do

Modern fighting men require tremendous quantities of modern food. Fresh meats, vegetables, fruits, eggs and fats are most readily and best preserved by mechanical refrigeration. These two facts pose the problem of portable refrigeration units capable of operating on their own

self-contained power or on local electric power, rugged enough to stand up under the hard handling consequent to being transported over the roughest terrain, and light enough to be really portable.

The technical staff of the Weber Showcase and Fixture Co. of Los An-

geles, in conjunction with the U. S. Navy, after considerable research and many practical tests, has developed and is now manufacturing a portable refrigerated carrier that perfectly meets these conditions.

These boxes are made for three types of drive, Model H, Model U, and Model B.

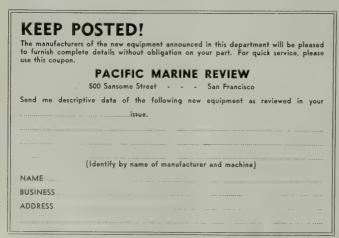
Model H (shown in illustration) has a Kohler gasoline engine-generator set supplying electric energy to a specially-designed motor that will work on outside power (if desirable) off either 50 or 60 cycle ac or 115 or 230 volt dc current.

Model U has the gasoline engine driving the compressor through belts and a jack shaft, and is so designed that an electric motor can be substituted for this shaft if it is desirable to convert the unit.

Model B is designed for straight gasoline engine belt drive.

Because the boxes are intended pri-

Welding is an important construction feature.





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We manufacture stop checks, swing checks, angle, globe, cross, gate and back pressure relief valves made specifically for marine use. All valves approved by U. S. Coast Guard.



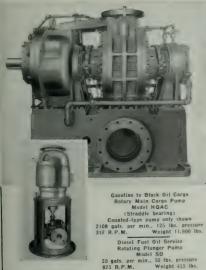
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Bulletin 18 describing these units in detail available upon request.

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marily for use in the field, where outside power is not generally available, company engineers adopted the simple Kohler gasoline engine. This unit, which is simple and efficient, develops 2000 watts of dc current for operation of the dc part of the electric motor. As with the straight electric system, operation is entirely automatic. Economy of operation may be noted in the fact that the engine consumes less than eight gallons of gasoline of low lead content every 24 hours, under even the most extreme operating conditions.

The refrigerators are capable of preserving perishables at 35 deg. F. or freezing meats and other foods at 8 dea. F.



Normally, the refrigerating mechanism operates during 16 of each 24 hours, the generator stopping and starting automatically within prescribed temperature ranges. A simple fool-proof mercury-actuated clutch enables the engine generator to develop maximum horsepower before the compressor load is engaged. The compressor itself is an efficient aircooled type of 1-hp rating. An oversize condenser of 11/2-hp capacity is installed adjacent to the louvered door opening, and is provided with dual fans so arranged as to direct the air flow over the entire condenser area, and to prevent eddying currents within the machine enclosure.

Mechanisms of all three systems are completely automatic, operating through simple controls. A high-pressure cutout is provided as a safety feature; in addition, overload relays are installed in the generator, ac and dc systems. To insure continued operation in the field in case of break-down, the following items are packed within the compact machine enclosure: a complete set of tools for normal maintenance; spare parts for engine, generator and compressor; extra set of belts: and a drum of Freon.

The refrigerators chilled by these units may be likened to refrigerator trucks without wheels. The comparison is particularly apt in that they are self-powered, are loaded through a

Fibre glass insulation assures positive low temperatures.



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large walk-in door, and may be moved wherever desired. Not equipped with skids and sling, the extreme overall size is 9 ft., 6 in. long, 6 ft. wide and 6 ft., 6 in. high. The carrier weighs approximately 5500 lbs. fully equipped.

The box is basically constructed of a welded steel frame over which heavy-gage steel sheets are continuously welded to make a completely sealed box, a particularly important consideration in regions of heavy precipitation. Two coats of weather-resistant baking enamel are applied on the outside after welding. Interior liner is heavy-gage galvanized steel.

Efficient insulation enables the box to operate under all conditions with case. Coils within the refrigerated compartment are of "vacuum plate" type, and are connected by means of vibration-absorbing flexible lines to a valved manifold in the control compartment. The coil area is more than ample to maintain temperatures as low as 8° F., and consideration was given to maintaining proper relative humidity, which is so important in the proper storage of frozen products.

New Sand Strainer

By preventing sand from entering pumps, a new sand strainer fills a definite need of small boat operators.

The production line—installation of interior coils and complete refrigeration system.





New sand strainer.



Here you see illustrated a very simple and practical "bench service" that is providing hot coffee, soups and other refreshing "pick-ups" to workers in industrial war plants . . . an actual photograph taken in a war plant.

The outlay for equipment is negligible \dots requiring a minimum of critical materials.

The AerVoiD vacuum-insulated carrier makes service to workers near their work easy and simple AND SAVES VALUABLE PRODUCTION MINUTES.

A box, a chair, a bench or window ledge, any vacant space a few inches square, serves as a resting place for AerVoiDs while serving.

Indoors, outdoors, anywhere around a large plant, the easy portability of AerVoiDs makes this efficient service possible.

Over 100 large industrial war plants already have AerVoiDs in service. Write for new circular stating why AerVoiDs are going into war plants in constantly increasing numbers . . . in the words of users themselves.

ASK FOR CIRCULAR PM 8-43

AERVOID all-metal vacuum-insulated Hot Food Soup and Coffee Carriers

VACUUM CAN COMPANY
25 SOUTH HOYNE AVENUE
CHICAGO.

It fits on the inlet end of the pipe leading to the pump and stops the passage of sand into working parts of the pump. Similar in operation to a shallow-well pump head, the sand strainer allows free passage of water between the disks of the strainer unit, which is self-cleaned by return flow of water when the pump has stopped operation. A large part of the sand is prevented from entering the housing by a course strainer plate fitted across the face of the unit.

This small model is finding wide use in all types of small boats. It is manufactured by the J. A. Zurn Manufacturing Co.

Air Conditioning Helps Submarine

How modern air conditioning helped the U. S. Submarine Wahoo to chalk up spectacular victories off New Guinea recently has been told in a telegram of commendation sent by Rear Admiral E. L. Cochrane, Chief of the Bureau of Ships, to employees of the York Ice Machinery Corporation in York, Pa.

Admiral Cochrane's telegram read: "You will be pleased to know that the U. S. submarine Wahoo, which recently won spectacular victories off northern New Guinea, is fitted with your refrigeration and air conditioning equipment.

"The Wahoo sank a Jap destroyer and two days later sent to the bottom a four-ship enemy convoy consisting of two freighters, a transport loaded with troops and a tanker. You who helped to equip the Wahoo deserve to share in this honor. The Bureau of Ships take pleasure in extending sincere thanks for this splendid equipment. Other naval craft await your refrigeration and air conditioning equipment. Keep it coming."



Identification Unit

Model B WIM identification unit, being produced by Photographic Equipment, Inc., includes a white washable background, self-leveling easel base, increased counterweight capacity, finger-printing equipment, easily demountable light brackets for increased portability, elevator can't-slip ratchet lock, and choice of size

Trailers in a Shipyard

This trailer loaded with a ship's propeller and a section of the shaft shows how highway equipment is made to double as shipyard equipment these days. It is one of a fleet of eight Fruehauf Semi-Trailers used with only two heavy duty tractors at Marinship's Sausalito Yards.

The fast shuttle service carries all kinds of heavy parts and materials and operates 24 hours a day. The truck-trailer couplings are full automatic so that the driver doesn't have to get out of his cab to couple or uncouple the semi-trailers. The runs vary from a few hundred yards to the full one-mile length of the yard.



Semi-trailer at Marinship yard. SEAMLESS STEEL TUBING

CENTRIFUGALLY CAST BRONZE and Other Alloys

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THE LIGHT-WEIGHT, NON-SLIP DECK COVERING WITH 2 APPLICATION METHODS . . .



DEKTRED provides a durable, non-slip, weatherproof surface for steel or wood decks, exterior or interior. Solid aggregates offering a firm footbold when wet or dry are included in a fast-drying plastic compound. Application is usually 1/16 to 1/32 in.thickness.

Try DEKTRED, either sprayed or troweled. See how firmly it adheres. Use it around gun mounts, on walkways, ladder treads, inside and outside of doorways and for interior spaces where a non-slip, protective coating is needed.

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Marine Sheet Metal Work; 290 pages, 81," x 11"; profusely illustrated; bound in light brown board, with dark brown stampings; published by the California State Department of Education, Sacramento, California. Price 85 cents.

This is one of a very fine series of texts prepared by the Program of Training for War Production Workers, Bureau of Trade and Industrial Education, California State Depart-

ment of Agriculture.

The actual work of preparing the text is done by a committee composed of sheet metal employees from California shipyards and instructors of sheet metal work. Marion A. Grosse, Special State Supervisor for Curriculum Construction, coordinated the work of the committee, and the material was edited and prepared for publication by Margaret Mckieneary Hitchcock, Special Supervisor for Vocational Training for War Production Work in Charge of Publications

The text completely covers sheet metal work as practiced in the modern shipyard. The treatment is simple and largely graphical, so that any intelligent student with a good pair of eyes can readily graps the idea. Tools, both manual and power, are described and illustrated, and each main classification of sheet metal work in a ship is given

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and up to date.

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Marine Electric Power; by Captain Q. B. Newman, U. S. C. G. (ret.); 240 pages, 4½" x 7½"; 160 illustrations; bound in blue buckram with white stampings; published by Simmons-Boardman Publishing Corp., New York. Price \$2.50 net

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Fire Pumps and Hydraulics; by J. E. Potts and T. H. Harris; 170 pages, 5½" x 8½", with numerous half tones, drawings, diagrams and tables; published by Chemical Publishing, Inc., Brooklyn, N. Y. Price \$2.50 net.

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"Use the Air You Need but Don't Waste It" is the theme of a new series of industrial posters sponsored by Ingersoll-Rand Company, whose purpose is to wage war on leaky hose couplings, valves and other pipe fittings, thus helping to speed production and avoid wasted power.

Bulletin 504 from Elgin Softener Corp. covers the inside story of boiler (Page 128, please)

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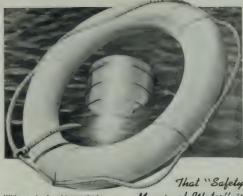
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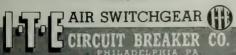


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HOT OFF THE PRESS

(Continued from page 124)

water conditioning by explaining the types of impurities found in boiler feedwater, how they accumulate, what happens when subjected to boiler temperatures, common causes of boiler scale, etc.

Flexible joints form the subject of a new book covering their problems, which has just been released by the Brooks Equipment Corp., New York City, and the Brooks Equipment Corp. of California, at San Francisco, Los Angeles, Seattle and Portland. It provides description and illustration of two new joints, which open up great possibilities for design. Shafts can now be made to rotate at any angle on any plane in any direction. The universal joint can be connected to extension shafts which rotate and oscillate simultaneously and have other movements.

H-O-H Water Studies: D. W. Haering & Co. Inc., Chicago, Illinois, organization of water treatment consultants, has just published a 48-page

booklet of articles on scale, corrosion and water treatment problems.

Profusely illustrated, the booklet provides important information including tables, charts and graphs on water problems occurring in cooling systems, hot water systems, boilers, and return systems, including special data on corrosion inhibitors, scale preventives, protective coatings, proportioning equipment and refrigerating brine problems.

Marine Products, a new 102-page collection of catalog reference data on marine products, has recently been compiled by Dusenbery & Strachan, Inc., N. Y. The information includes ratings, overall dimensions and application data on oil reclaimers and purifiers, plastic gasket-and-pipe-thread compounds, steam separators and traps.

There is also considerable information on acoustic telephone booths of various sizes and styles for marine use in both new and remodeling work.

Another section deals with an ingenious pressure equalizer that protects gages and similar pressure instruments from damage and premature wear due to shock and chattering.

The products described are those

which the company handle as sales agents and engineering representatives for Madison Iron Works, Inc., Wright-Austin Co., Hilliard Corporation, National Engineering Products, Inc., and Burgess Battery Co. (Acoustic Div.).

The Madison Iron Works is an old concern, dating back to 1842, and recently taken over by the present owners of Dusenbery & Strachan for the construction of diesel engine exhaust systems, mufflers, spark arrestors and similar equipment.

Copies of this publication may be had upon request—refer to Catalog No. 230.

"The Welding of Piping" is a practical treatise of 16 well-illustrated pages. Its material consists of a series of articles prepared by Air Reduction's Applied Engineering Department.

It comprehensively covers various types of ferrous and non-ferrous piping, their dimensions, fabrication, and estimates of welding and labor costs.

Copies may be procured on request to Air Reduction Co.

Oxyacetylene Flame Adjustment, Airco's new chart for oxyacetylene flame adjustment, prepared particularly for guidance of new welders, is being welcomed even by "old hands."

It shows natural color photographs of five fundamental flame adjustments:

- 1. Acetylene burning in air
- 2. A strongly carburizing flame
- 3. Slight excess of acetylene flame
- 4. Neutral flame
- 5. An oxidizing flame

Being so completely graphic, it conveys the proper appearance of the various welding flames faster and more accurately than any amount of descriptive instruction. This chart is a vitally important guide for every welder, for even the best manipulative welding skill is wasted unless flame adjustments are correct.

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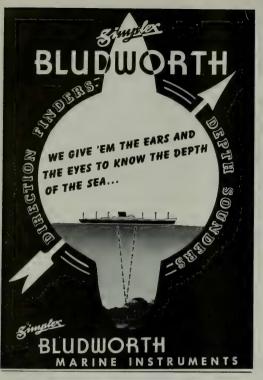




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New Orleans-R. M. Shad, 7738 Hampson St. Walnut 4786 The FRANCE PACKING COMPANY, Tacony, Philadelphia, Pa.

Original FR

Group Insurance for Shipvard Workers

Employees of seven San Francisco Bay shipyards are qualified to participate in a group life insurance plan which the Maritime Commission is prepared to approve in Washington, according to the local Martime Commission office.

This plan is to be known as the Maritime Commission Standard Plan of Contributory Group Insurance, and will be applicable to all shipyards working 100 per cent on Maritime Commission contracts. Among those eligible to qualify are the following shipyards: Marinship, Sausalito; Moore Dry Dock Co. Yard 1, Oakland; Pacific Bridge Yard 1, Alameda; Bethlehem Shipyards, Inc., Alameda; and Richmond Shipyards, 1, 2 and 3.

Under the plan, workers earning less than \$1.25 an hour may obtain life insurance coverage of \$1,000, and those earning in excess of \$1.25 per hour may obtain coverage of \$2,000, as well as health and accident benefits.

The Commission's Division of Insurance has notified all shipyards operating 100 per cent on Maritime Commission contracts that the Commission is now prepared to approve the Standard Plan, in which half of the employer's cost and a proper administration expense are made reimbursable items.

The expansion of our shipbuilding program has in many instances caused the transfer of key men from their parent companies to shipyards, thus causing them to risk losing their group life insurance. Many of the newly established yards do not have a program for such insurance, although contributory insurance has been in effect with most of the large employers for many years.

Willard Provides New Aluminum Foundry

The Willard Storage Battery Company, long-time manufacturers of quality storage batteries for automotive, aviation and industrial uses, have recently opened a modern aluminum castings foundry and are now in production on high quality, heat-treated aluminum aircraft castings at a plant strategically located to serve much of the country's warplane production facilities with overnight deliveries.

The Willard company also announce that while production capacity at the new foundry is several hundred heattreated aluminum aircraft castings per hour, this production does not affect the company's production of storage batteries at its Cleveland, Dallas, Los Angeles, Toronto and other plants. The new foundry is separate from the plants in which storage batteries for tanks, jeeps, planes, ships and other mechanized units of the Armed Services are manufactured. Production of storage batteries for civilian and industrial uses also continues.

Interesting among the several notable items of modern equipment at the Willard Foundry is a battery of Osborn "Jolt-Squeeze" Molding Machines. Other equipment includes: Lindberg Heat Treating Furnaces; Coleman Core Baking Ovens; Royer Sand Conditioners; a J. C. Smith Age Treat Furnace; and complete General Electric X-ray inspection equipment.

Parts Produced by Powder Metallurgy

Consistent with the national effort to speed up war prodluction, Keystone Carbon Company, St. Marys, Pennsylvania, has enlarged its operations in powder metallurgy to include production of small parts of special design and shape which eliminates machining operations, and conserves manhours and materials.

Proof that SPIRALOK SHIPBOARD CABLE is Waterproof!

PROOF No. 1:

The National Bureau of Standards connected a section of Spiralok cable into a junction box through a standard marine type packed fitting. After three weeks submersion of the assembly, the Bureau reported that the cable was taken apart to see if water had leaked under the armor and "no evidence of such leakage was found". It also stated: "no water was found to have entered the junction box at any time".

PROOF No. 2:

A section of lead-sheathed Spiralok cable was submerged in a cylinder with standard fittings for the outlets. No leakage occurred even after hydraulic pressure of 200 pounds was applied for 36 hours. A section of Spiralok cable without a lead theath withstood exactly the same amount of pressure for the same length of time.

Double-packed by an exclusive moisture-resistant seal, Spiralok Shipboard Cable prevents moisture from entering the metal tape armor of the cable junction boxes. It is flexible and can be bent without injury around a circle only six times the cable diameter. Spiralok is the ideal mechanical and moisture-resistant protection for synthetic and varnished cambric insulated cables. Installation is simple. It saves space.

Write for detailed information.



U. S. Maritime Commission.

Bureau of Marine Inspection and Navigation. U. S. Army.

American Bureau of Shipping.

Marine Design Section and various U. S. Naval Districts, as an alternate to basket-weave armored cable under A.I.E.E. Spec. 45. It is now being used in many new ships.

Specifications:

Spiralok Shipboard Cable conductors, insulation, tapes and lead sheath—is made in strict accordance with A.I.E.E. Spec. 4,5—"Recommended Practice for Electrical Installations on Shipboard". Standard fittings may be used! The only new departure is the new Spiralok approved armor.

AVAILABILITY:

Conductors: All sizes and required number of conductors. Insulation: Rubber or varnished cambric as per A.I.E.E. Spec. 45. Sheath: With or without lead sheath. Armor: Spiralok bronze or galvanized steel with chromate coating.

Voltage: As required.

Diameter: Within A.I.E.E. specification limits, can be installed in standard fittings.

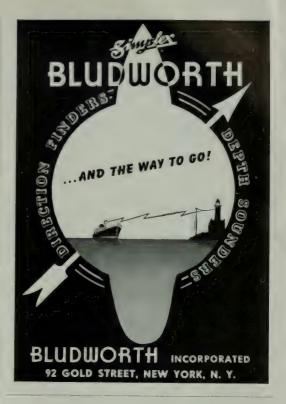
Weight: In no case more than 5% over nominal weight listed in A.I.E.E. specifications.

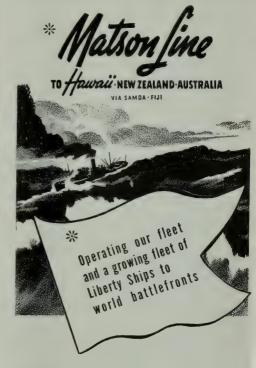
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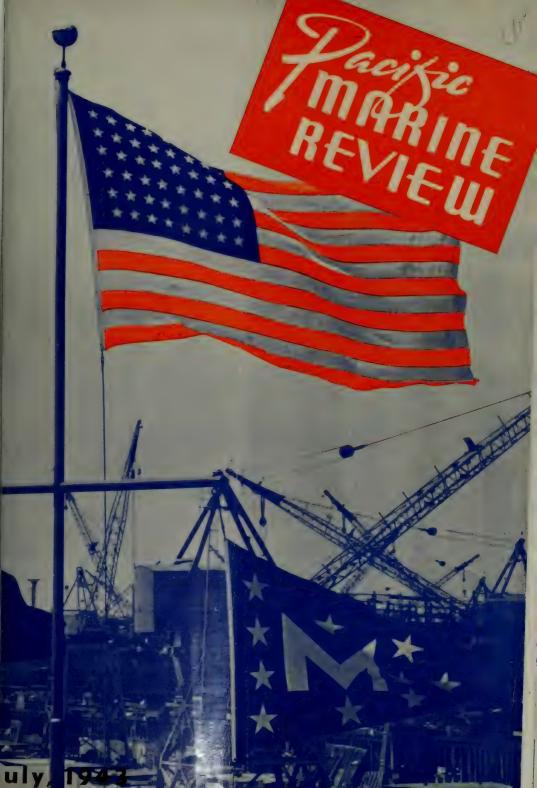


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Pacific IMARINE REVIEW

Cover Illustration

The photograph from which our cover illustration is produced is used through the courtesy of the California Shipbuilding Corporation. It depicts the flagstaff at that yard—the greatest of the "Liberty Ship" building yards—with the national flag at the peak and the Merit flags on the cross arm. Calship has won every award for achievement offered by the Marittime Commission.



Official Organ
Pacific American
Steamship Association

Shipowners Association of the Pacific Coast

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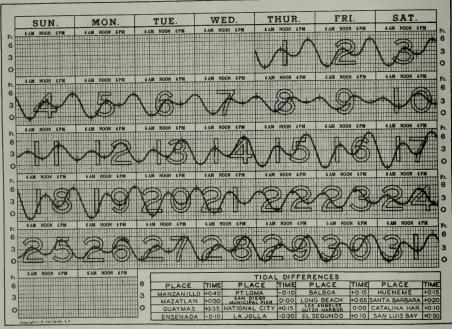
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Pacific IMARINE REVIEW

Just Compensation

The fifth amendment to the Con stitution of the United States, in its concluding clause, guarantees that no private property shall "be taken for public use without just compensation." This is part of the first ten articles of amendment, the so-called Bill of Rights, declared in force on December 15, 1791. "Just compensation" since that date has acquired very extensive judicial definition in proceedings of eminent domain. This definition measures up to the simple, common-sense idea that "just compensation" means the fair market value of the property at the time of

However, Section 902 of the Merchant Marine Act somewhat complicates this matter in regard to waterborne craft. This section gives government authority, in time of national emergency, to requisition all vessels owned by its citizens, either for use or title, and pay just compensation therefor, provided: (1) "that in no case shall the value of the property taken or used be enhanced by the causes necessitating the taking or use"; (2) "the owner shall not be paid for any consequential damages arising from a taking or use of property."

Both of these limitations were in early use by the courts of the United States, and have been established as rules to be followed in determining just compensation. Judicial decisions are generally to the effect that if increased value results from the mere taking of property by the Government, or from a disclosed intention to take the market value, determining just compensation shall be that previously prevailing and no increase can

be recognized which resulted from the taking by the Government or by notice of intention to take.

Rates of charter hire and valua tions were fixed by the Maritime Commission and the War Shipping Administration taking cognizance of this theory and were not generally unsatisfactory to the owners of water craft. In December, 1941, the Comp troller General criticized this theory and suggested that under a literal reading of the statute, the causes necessitating the taking were really the outbreak of the European war on September 8, 1939, and that any enhancement subsequent to that date should have been disregarded as in violation of the statutory mandate, thus attributing a meaning to the statute which it is generally conceded would render it not only unconstitutional but somewhat ridiculous, because it would purport to fix values as of times long before there was even any authority to requisition, much less an intention so to do. But, says the Comptroller General in effect, constitutional or unconstitutional, it is the duty of the Government administrative officials to carry out Congressional mandates and leave questions of constitutionality for the courts and the Congress.

The rates fixed by W. S. A. and agreed to by ship operators are prejudiced by this interpretation of the Comptroller General, and for some months past W. S. A. has either withheld settlements on charter hire and payment for loss of vessels or has advanced without prejudice from 50 to 75 per cent of the amounts previously agreed upon. This practice is now in

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Proceedings of the many of the process of the proce

The rates now in dispute its verlow rates. The going rate in 1941 was 84.50 to 85 at per double ght ton per month. The 1941 rate al. ready, by purely voluntary action on suggestion of the Mantime Commission, had been scaled down from an average rate of \$7.50 per deadweight ton per month, many months before Pearl Harbor, and while the United States was technically at peace. Thus the shipowners, as of July 1, 1942, came under a ceiling much lower than the prevailing rates, and six months earlier than other American indus tries. Had they insisted on waiting for the legislation then pending, their ceiling would have been around \$8 00 per deadweight ton per month

The present rates are much too low and yet are not being honored by the Government, due to a purely technical dispute between two Fed eral agencies. We claim the rates are too low because they do not allow accumulation of funds for replace ment of tonnage. Cost of shipbuilding has risen rapidly in the past few years, both in American shipyards and in yards abroad.

Another factor in the Merchant Marine Act of 1936 that affects this picture is the section that gives the Government the right to acquire any vessel built with construction subsidy at its depreciated cost, regardless of its market value. At the present time, a shipowner from whom the Mari time Commission takes a ship under such conditions would have to put up 25 to 50 per cent more than his compensation if he had to replace that ship in his fleet.

This whole matter involves not only shipowners but any owners of any property in the United States. It is working great hardship on the owners of yachts, barges, tugs and all classes of workboat craft. Similar action is threatening the title of all tidelands. These are merely straws indi-

cating the direction of the efforts being made at Washington in the District of Confusion to break down the constitutional system of checks and balances and produce an autocratic government of centralized bureaucracy. We are glad to see that Congress is asserting its authority and standing squarely against these efforts. In this stand Congress should have the whole-hearted support of every man or woman who has any stake in the future of America.

Post-War Shipping— The Merchant Fleet

In our February, 1943, editorial comment, we posed seven "conditions that will be in force at the end of the war," and that will "gravely affect the American Merchant Marine." We now propose to elaborate a little on each of these conditions, Number One being: "The United States Government will own the largest fleet of merchant ships in the world."

This American flag fleet of merhant ships, if the war ends late in 1945 or early 1946, will be composed of approximately 50,000,000 tons of ocean-going vessels of an average age of less than four years. That is approximately the total tonnage of ocean-going vessels in the merchant fleets of all the maritime nations of the world at the opening of the present war.

This enormous tonnage will have a considerably higher average speed than that of the total pre-war merchant marine. Its carrying capacity will therefore be considerably greater than that of pre-war fleets.

There are several factors in the present trends of post-war planning which will help to use this fleet, but which, if we are not very careful, will act as deterrents to the transfer of the bulk of this fleet to private ownership and operation.

All Federal post war planning seems to be geared to the idea of maintaining a large navy and a very considerable standing army for the purpose of maintaining peace throughout the world. If this becomes effective, it means the use of a very considerable portion of the merchant fleet as navy and army transports and supply ships. The Navy and Army are now using most of the fleet for those purposes. Will the Army and Navy, after the war, continue to use this tonnage all over the approach perhaps in competition with commercial shipping?

Time is much talk out of Wash-

ington on the idea that we should absorb as much of this fleet as possible in American intercoastal and overseas shipping and lay up the rest as a reserve against future emergencies. This would be courting trouble. The ships laid up would, for the most part, be the E-C-2 model, the so-called Liberty ship. The Liberty ship is an emergency job. Laying up a lot of Liberty ships would inevitably produce the same results commercially as occurred with the laid-up fleets after the last war. The expense of upkeep and the inroads of corrosion would get Congress in a panic. The market for ships would be constantly decreasing and the order would come to sell on a very low market. Fly-by-night operators would buy these ships at scrap prices and put them into competition with established firms, thereby creating great confusion in the shipping business.

The Maritime Commission and the War Shipping Administration, as at present constituted, have been careful to allot the bulk of the new ships to well-established operators who know the business and who are financially able to handle fleets of ships. However, as was shown conclusively after the last war, the bare presence

of a large fleet of idle ships owned by the Federal Government is a very efficient deterrent to capital investment in the shipping business.

What, then, should be done with that portion of this huge fleet which cannot be absorbed by any conceivable American normal commerce after the war? In our judgment, we American method of treating all surshould treat it in the time-honored plus commodities: we should sell it on the markets of the world.

Our reasons for this conclusion are these:

(1) The surplus ships will probably be 100 per cent Liberty ships.

(2) Liberty ships are not suitable for any of the American intercoastal or overseas cargo liner trades.

(3) Neither American shipping men nor American seamen are interested in the tramp trading between foreign ports that absorbs so much of the world's tonnage.

(4) At the close of this war, there will be tremendous demands for simple cargo steamers ready to go to sea, and prices for that type of tonnage will be very high.

(5) The Liberty ship is ideal for

most tramp services.

(6) Within three years of the close of the war, cargo steamers ready for sea will be selling at the lowest price in modern history.

For all these reasons, we suggest that the Liberty ship fleet be treated as any other commodity is treated, and sold while and where the demand is good and the price high.

The standard cargo liners (C·1, C·2, C·3, C·4), the combination cargo and passenger liners, and in large measure the Victory type, can be, with suitable subsidy arrangement, absorbed in the normal intercoastal, coastwise and overseas American flag trades.

American

Steamship Operators

These are the days that are witnessing the greatest movement of men and materials overseas that the world has ever known. Great masses of troops, with all their munitions, equipment, food and shelter, are landed on tropic isles or far-away continents. Convoys move out of our

ports with smooth efficiency. Ships are loaded with careful dispatch. The tonnages, when we hear of them, seem tremendous. But so little is heard about American steamship operators these days that the man on, the street, talking on these matters, sometimes wonders if the steamship.

companies would not have handful matters more efficiently, and it is a still too late for the Government tturn the job over to the old loss specators.

The truth of the motter is that ti-"Government," the sight the Wei Shipping Administration add call of the American ship was a and beused his experience and skell to the utmost. The shipowner and slow p crater are now working whole heartedly and unanimously for their Uncle Sam, and are doing a magneticent job.

All merchant overseas shipping is in the hands of either the War Shipping Administration, the U.S. Navvor the U.S. Army.

All of the shipping in the hands of WSA, is assigned to private ship. operating firms, who operate the ships, load and unload cargoes, and take care of all the details incident to the proper management of ships as transportation units. The main difference between operation today and normal peace-time operation is that no public salesmanship is required The lines do not have to sell space, nor build ships, nor pay damage claims. W.S.A. assigns to them the ships and the routes for which those ships are to be loaded. Port of Embarkation assigns the cargoes. Sea Frontier issues the sailing orders. Everything else is up to the ship op-

The operating staff of the War Shipping Administration is composed largely of the most experienced operating executives from the steamship companies. These men have been placed in charge at American and at foreign ports to smooth the way for and expedite the movement of American ships.

The organizations at the home ports are working long overtime hours at the never-ending task of supplying troops at the front with all the varied necessities incident to modern warfare. They are doing this at rates of compensation fixed by W.S.A., and fixed much lower than the commercial rates prevailing before war. All shore-side industry and all the men who man the merchant ships in these days are being compensated at high rates, and are constantly, in addition to the cash com-

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The Nation's Shipyards

In lone, the nation's shipvards delivered to the Maritime Commission 168 edgs wessels with an aggregate total deadweight tomage of 1.676, 500. This compares with the record total of 175 vessels in May (31 days). These June deliveries bring the total for the first half of 1943 to 879 ships, with a total deadweight tomage of 8.818.622, which is almost 9 per cent greater than the total (8,089,752) tomage of cargo vessels delivered from American yards in 1942.

The total of 168 vessels included 115 Liberty ships, 19 C-type cargo ships, nine coastal cargo vessels, 11 M. C. tankers, three coastal tankers, three special types, six seagoing tugs and two ore carriers.

The West Coast region produced 82 ships totaling 870,800 deadweight tons, or 51.94 per cent of the national total. The East Coast built 30.39 per cent of the tonnage, or 509,400 deadweight tons, represented by 45 vessels. On the Gulf Coast 25 ships with combined deadweight tonnage of 237,800 were delivered, accounting for 14.18 per cent of the grand total. The remaining 3.49 per cent of the tonnage was delivered from Great Lakes region yards, which built 16 ships.

High totals for individual yards include:

California Shipbuilding Corporation, 20 ships (a record for an individual yard); Oregon Shipbuilding Corporation, 17 ships; Richmond No. 2, 17 ships; and Bethlehem Fairfield Shipyard, 14. The foures to r line mide its "Let 1944 will meet the high chal" of quota set by the Maritime Commission and accepted by the wards. It the shipwards produce for the rest of the year at the average rate for June, they will total well over 19.0 miles for the 12-month period. If they improve during the next six months as tast as during the past six months, the total will be around 22,000,000 tons. The present average daily production is 5.6 ships per day, totaling 55,883 tons total deadweight.

New W. S. A. Pacific Coast Director

Lieutenant W. Creighton Peet, Jr., U.S.N.R., who has been Secretary of the United States Maritime Commission since April 27, 1937, has been assigned special duties for the War Shipping Administration on the Pacific Coast and will serve as Acting Pacific Coast Director.

Effective July 1, 1943, A. J. Williams is designated Acting Secretary of the Maritime Commission and War Shipping Administration. Lieu tenant Peet has also served as Secretary of the War Shipping Administration and the Combined Shipping Adjustment Board.

At the time of his appointment to the Maritime Commission, Lieutenant Peet was an officer of the Manhattan Storage Company, New York City. During 1934 and 1935 he was Secretary of the Industrial Appeals Board of the National Recovery Ad ministration and from 1931 to 1934 was Treasurer of the Soya Corporation of New York City.



A typical Standard Oil Company of California tanker deeply loaded coming into port.

N THE April, 1943, issue of Pacific Marine Review, we published a description and general arrangement plans of a pair of identical tankers built by the Sun Shipbuilding and Dry Dock Company of Chester, Pennsylvania, for the Standard Oil Company of California. Named J. H. Tuttle and R. C. Stoner, these tankers are the largest vessels yet built to the specifications of the company.



At the time that description was published, no photographs of finished interiors or machinery installations were available. Herewith, through the courtesy of the owners, we present some illustrations showing details of machinery, navigation equipment and accommodations.

The principal dimensions of the hulls are: length overall, 547 feet, 2½ inches; length on loaded water line, 531 feet, 5½ inches; beam molded, 70 feet, 0 inches; depth molded, 40 feet, 0 inches; international summer load line draft, 30 feet, 4½ inches; and cargo tank capacity, 152,595 barrels.

Cargo space on each tanker is divided into 28 cargo tanks, 2 cofferdams, a cargo pump room and 3 fuel tanks. A single screw propeller, with a diameter of 20 feet and a pitch of 17 feet, drives this hull, fully loaded, at 15.5 knots trial speed, when turned at 97 rpm. At the forward end of the shaft that turns this propeller is a double reduction geared cross compound General Electric marine turbine, which delivers 8200 shp to the propeller at 97 rpm and 9000 shp at 100 rpm. The high pressure end of this turbine takes steam at 435 psi and 750° F. from two Babcock and Wilcox marine watertube boilers, and the low pressure end exhausts into an Ingersoll Rand condenser, which will handle 70,060 lbs. of exhaust steam an hour vacuum of 28 inches Hg. when the tubes are 85 per cent clean and are served with cooling water at 83° F. The Ingersoll Rand centrifugal pump servicing this condenser is driven by a 150-bhp

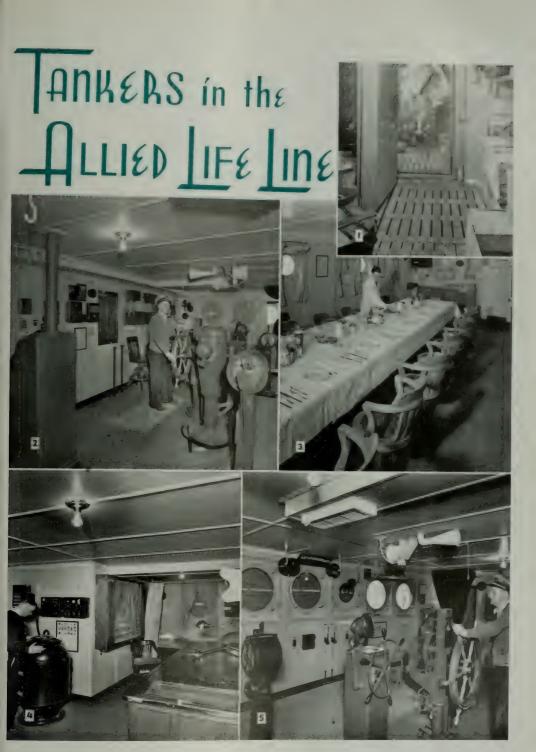
Westinghouse motor and has a capacity for moving 14,000 gpm against a 30-foot head. Bailey thermo-hydraulic feed water regulators, combustion control and draft control provide automatic regulation of steam conditions.

Elaborate provision is made for the comfort, health and safety of the crew, as will be noted in the illustrations. All cargo tanks are covered by the Standard Oil of California flue gas system, which keeps all ullage space in tanks filled with inert washed and cooled flue gas. The machinery spaces are protected by a C-O-Two blanketing system with remote and local control.

In short, these two new tankers, now busily engaged in transporting vital war material, are fully up to the high mark set by Standard Oil of California specifications, and are, in fact, the flagships of the large fleet of fine tankers operated by that corporation.

ON THE FACING PAGE:

- (1) Crews are well ted, as may be easily imagined by this typical example of vegetable and meat cold storage rooms aboard one of the company's tankers.
- (2) Pilot house of the R. C. Stoner, looking oft, featuring Mackay radio direction finder.
- (3) Officers' mess.
- (4) Chart room, featuring Sperry Mark IV master gyro compass.
- (5) Pilot house, showing Sperry gyro repeater compass and automotic steering control, American Engineering electro-hydraulic telemotor with manual control, Bendix engine telegraphs, and Kent clear vision



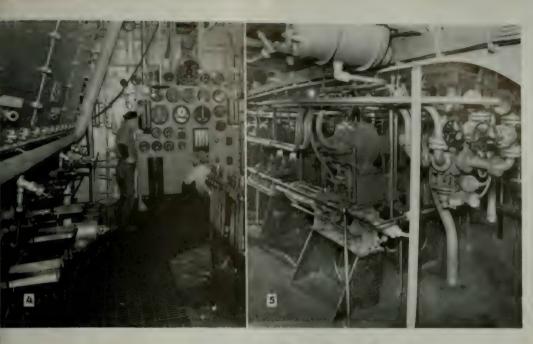
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- (1)A typical crew room.
- (2) After portion of main deck, looking forward.
- (3) The American Engineering Co. windlass on the forecastle deck. The chain is Naco.
- (4) Boiler platform, with part of the front of one of the two Babcock & Wilcox boilers and the Bailey combustion control board.
- (5) American Engineering Co. turbo-electric steering gear.
- (6) General Electric double reduction gear main turbine in engine.
- (7) Operating platform in engine room.



Aboard the R.C. Stoner





Corvette type steam engine.

HEN Joshua Hendy Iron Works completes a part of a reciprocating steam engine, its measurements are as stated to a tolerance of one thousandth of an inch. Such accuracy in large marine engine manufacturing is no exclusive company attribute, but the scale on which it is attained and the methods that have been developed to make it possible is its own accomplishment.

The company now has the most completely equipped gage testing laboratory on the Pacific Coast and one of the best in the United States. The application of dimensional control through the agency of this laboratory has brought substantial savings in materials, man hours and production costs throughout the plant.

Less than two years ago Charles E. Moore of the Moore Machinery



Company took over the then obsolete plant. Mr. Moore with tremendous energy moved in and began the transformation which shortly put the plant out front as the largest producer of marine reciprocating steam engines in the world.

An original order of twelve 2500hp triple expansion reciprocating steam engines was dwarfed within a few months by an order for one hundred. The plant has completed more than 350 of these 137-ton prime movers to date and will build one-third of all the engines used in the Liberty ship fleet.

While this is a major part of the production program at the plant, it was only the beginning. In rapid succession orders for two classes of marine turbines came in, followed by an order for 2,750-hp steam engines to power the Navy's fast-building convoy escort fleet. The complex facilities for building these four types of engines have been erected and production is well under way on them all. The turbines are a 4000 shp for C-1 cargo vessels and an 8000 shp for C-3 cargo vessels.

With this vast expansion at an unprecedented speed, the company was faced with a measurement control problem equally complex. The indispensability of precision in the machining and finishing of all parts in the manufacture of turbine engines is well known to all engineers. At the high speeds these engines operate, a fractional dimensional irregularity would make them fly apart.

Mr. Moore, with his years of background as a machine tool expert, con-

> A portion of the gage room, with an versal hob-checking machine factured by the Illinois Tool Works.

VICTORY

M. F. Jirka, in charge of the gage laboratory, listens to the operation of the first Hendy-built turbine durine its initial tests.

ceived the idea for a gage control laboratory which by its completeness of equipment and its method of coordination with the plant would solve this dimension control problem.

Busy with administration problems, he delegated the task of carrying out the plan and organization of the laboratory to H. C. Gunetti, general superintendent of the plant.

Not only has the laboratory filled the requirements at the plant, but it has extended its services beyond the plant to the 130 subcontractors who supply Hendy. Through dimensional control, their products are kept in constant uniformity with the specifications.

The laboratory was developed along the most modern lines. The vital matter of temperature control is assured by an air conditioning system which maintains the laboratory at the standard 68 degrees. Shadowless, uniform lighting is maintained by banks of fluorescent lamps lining the walls and ceiling.

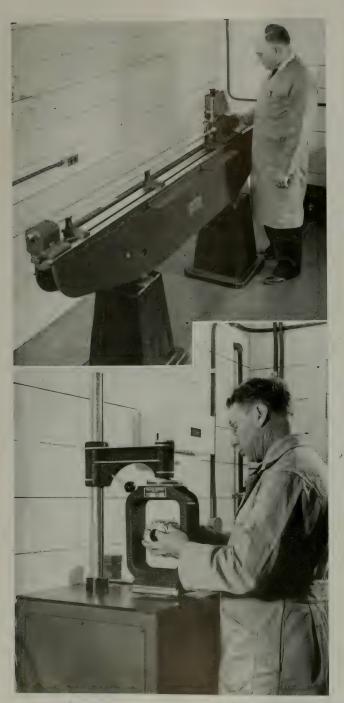
M. F. Jirka, who went to the plant from the U. S. Army Ordnance Laboratory at Stanford University, is in charge. The work is continued on a 24-hour basis. The staff now numbers ten, and can be doubled as demands increase for gage control work.

No standard measuring device being obtainable for pin gages over 80 inches long, George D. Bowman,

Clyde Benjamin checks a thread plug element on a Bausch & Lomb projector.







chief tool engineer of the plant, built a measuring comparator which would handle pin gages up to fourteen feet long, with an accuracy to 5/10,000ths

of an inch.

One of nine such devices in the United States is the Illinois Tool Works' hob and worm measuring machine at the Hendy laboratory. The lead of the hob, the profile of teeth, the gash or flute and the rake are all checked by this machine.

Three different types of equipment are available for hardness tests. These are the Brinell, Rockwell and Sceler-

oscope system.

For measuring pin gages, plug gages and thread gages under 80-inches in length the laboratory is equipped with a Pratt and Whitney standard measuring machine. It gives a guaranteed measurement to 10/ 1,000,000ths of an inch. A Pratt &

> Checking a standard on a Pratt & Whitney measuring machine.

Whitney Super-Micrometer will be added to the equipment within a few weeks time.

A Bausch & Lomb contour projector is used to check special gages and tools. It has a magnification of 1 to 100, which can be used on smaller pieces with other magnifications of 1 to 50, 1 to 25 and 1 to 10.

Other equipment in the laboratory includes an Ashcroft gage tester for checking pressures from five to 1000 lbs., a Bausch & Lomb toolmakers' microscope, a 36" by 72" master surface plate, a Michigan Tool Company hob-checking machine, a Magnaflux magnetic inspection apparatus for detecting discontinuities, imperfections and flaws in tools and metal parts, sets of master gages for turbine blading, optical flats for surface testing, a complete set of thread measuring wires for both Acme and V types of threads, and three sets of Pratt & Whitney precision gage blocks, and also toolmakers' flats, height gages and other small measuring tools.

With so well equipped a laboratory and a close coordination in dimensional control with all departments of the plant and all subcontractors, the company has an established high standard of uniformity in its measure-

ment control.

included among the gage laboratory equipment is a small magnaflux in-spection machine used to inspect hobs magnetically,

Damage By War

TODD YARDS AT WORK



Above: This terpedoed ship, abandoned by her crew and later salvaged, was brought to a Todd repair yard, where it was restored to service in 78 per cent of the time estimated for its repair. John D. Reilly, president of the Todd Shipyerds Corporation, revealed at the annual meeting of the stockholders of the corporation on June 16 that the nine ship repair and building yards on the Atlantic, Pacific and Gulf Coasts have built and repaired 6,020 ships, aggregating 24,000,000 tons since Pearl Marbor.

Below: Not infrequently a torpedo will go completely through a skip, as it did on this vssel, which was repaired in a company repair yard.





Above: When a torpedo strikes a skip, crumpled plates, distorted ribs and torn bulkheads are the result. Here is the survivor of a torpedo attack which was restored to service.

Below: Gaping, jagged holes are torn in a ship's hull by torpedoes. Todd shipyard repairmen had this vessel back in service a short time after it was docked.



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Training

Some Calship workers at a noon yard show. These form a small fraction of the 44,000 who man this great shipyard. Most of them had never seen a shipyard before working here. The training problem is terrific.

training many times their own number in the shipyard arts.

In order to train thousands of these workers in a very short time, it was, and is, necessary to have the training very narrowly specialized for the beginner. To produce a flame cutter (burner) or a welder in six weeks, means that you have as an end product, not an all-around expert in welding or burning, but simply an individual who has learned, in that time, to manipulate the electric arc "stinger" so as to produce a horizontal weld and a vertical weld each six inches long and each able to pass inspection, or who has learned to flame-cut along the lines of a simple figure without too much deviation from the line or too much bevel on the edge.

With the set-up of prefabrication, shop assembly and way assembly followed in the yards manufacturing E-C-2 (Liberty) vessels, the individual worker performs a specialized task. Once he has mastered the simple use of a tool such as the electric arc, the burning torch, the punch, the bending brake or the bulldozer on the bending slab, he very easily applies that tool to the simple specialized task assigned, and so have been produced the great majority of the semi-skilled employees working in the great shipyards of the Pacific Coast that have broken all previously existing records for the fabrication, assembly and outfitting of cargo ship hulls.

The training system at the big yard on Terminal Island, Los Angeles harbor, is under the dynamic leadership of Ted Warne, whose official title is Supervisor of Training. In the two years during which he has functioned, the training system has contacted over 27,000 trainees, the great majority of whom have completed one or more of the courses given in the various divisions of the system.

The four divisions of this system

HEN, two years back, the California Shipbuilding Corporation was formed to build and operate the largest single standard ship assembly plant in America, the Maritime Commission visualized the necessity for training many thousands of shippard workers to operate such a plant.

Southern California shipyards had built very few hulls during the previous two decades and there were practically no skilled steel shipyard mechanics available. Fortunately, there was a fairly large pool of structural steel workers, whose normal work was hampered by war conditions and many of whom could be directed to shipyard work. These, together with a few of the older retired shipyard workers, formed a nucleus with which to start. This nucleus had to be responsible, not only for building the ships, but also for



Sam Duvall, veteran of the French Foreign Legion, instructs two student welders in the in-yard welding training school.

System Calship

are the basic school for welding, the basic school for burning, the "learn while helping" department, and the up-grading school. Each has a very definite, separate and integrated part in the system.

The two base schools offer a specialized training in the arts of the electric arc and the oxyacetylene burning torch. Each works on the production of simple forms. The following brief description of the burning school will suffice for both of these divisions

An open roofed area, equipped with burning tables and an office at one end for the supervisor, provides space for ninety or more burner trainees. The equipment is used 24 hours a day in three shifts and works 282 at the present time. Approximately two-fifths of this number is women. Trainees get 95 cents an hour and work an 8-hour shift. If they are proficient at the end of six weeks they are raised to second class, at \$1.05 an hour. First-class trainee burners get \$1.15 an hour, and regular full-fledged burners \$1.20 an hour.

This training shop works on various types of clips and clamps for lining up weldments. Of these, it produces 55 tons a day. The burning shop has a special expediter to keep the steel supply adequate. His business is to spot scrap steel of sufficient size to make the product and arrange for its transportation to the burners' subpol

The trainees come from all walks of life. One small lady, with the face of a madonna, is the widow of an R. A. F. pilot, whose plane was shot down over the English Channel. Another is an interior decorator of some note, who felt she should be in more direct war work, and closed her shop to take up the torch.

One of the men presently learning the flame-cutting art was a top notch wrestler before entering the school.

Over 2000 burners were turned out

this is a factor that the test were dis-

The corn while helpine deputt in interest of the production of the set of the

At the up-grading school, workers at Calship attend and study on their own time. Here, under competent instruction, the worker at various trades is taught blue print reading, mathematics, drawing, welding procedure and many other subjects ad culated to put him in line for promo-

(Page 87, please)



Rosemary Haskell, who was a university psychology major in a Canadian college before she came to work as a burner at Calship.

An instructor and two women trainees in the burning school.



SHIP TONNAGE FIGURES BOTHER EVEN EXPERTS

The question of how "big is a ship" has involved various governmental agencies ever since war broke out. There have been many interpretations made by men closely identified with steamship management and also by those outside the industry.

Their confusion is understandable when it is pointed out that there are at least six methods of measuring "tonnage," according to the American Merchant Marine Institute.

For example: A Liberty ship can be anything from 3700 tons to 14,200 tons, all depending upon the category of tonnage used. The Liberty ship is 7176 gross tons, 10,500 deadweight tons, 4380 net tons, 3700 displacement tons (light), 14,200 displacement tons (loaded), 9600 cargo capacity tons and 468,000 cubic bale capacity.

To the average person, a ton is simply 2000 pounds, but when translated into the size of a ship it becomes most anything else. All of the varied tonnages are rated in long tons, which are 2240 pounds. Tonnage description is virtually mean-

ingless if a vessel is merely said to be "10,000 tons." The description should include one of at least four principal categories—gross, deadweight, net or displacement. Cargo capacity tons and bale cubic capacity are infrequently applied. Gross and deadweight are the most common measurements used by the merchant fleet. The U. S. Navy invariably clings to displacement.

Deadweight Tonnage

Contrary to common belief gross tonnage is not avoirdupois; it is a cubic measure. One gross ton is 100 cubic feet and gross tonnage is the entire internal cubic capacity of a ship expressed in units of 100 cubic feet to the ton. As a descriptive term it is most accurate when applied to passenger vessels.

However, the best and most informative term of measurement is deadweight tonnage. It signifies the weight of the cargo, fuel, stores and fresh water required to put the vessel down in the water to its legal loadline. The Maritime Commission in announcing ship construction uses deadweight tonnage. British ship fig-

ures are usually expressed in gross

There is no handy rule for translating gross tonnage into deadweight tonnage, as one is a space measurement and the other a weight measurement. However, roughly in ordinary freight vessels deadweight tonnage is one and one-half times gross tonnage.

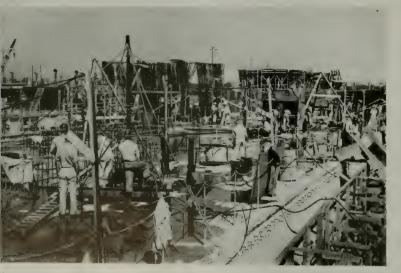
Net Tonnage

Net tonnage, like gross, is a cubic measurement, and represents "the earning spaces" in a ship. It is arrived at by deducting from the gross tonnage the number of units of 100 cubic feet of space used in the operation of the ship, such as crew's quarters, chart room, wheelhouse, engine room, boiler room, fuel tanks and certain spaces covered by rules of various governing bodies.

Displacement (light) is the weight of the ship excluding cargo, passengers, fuel, water, and other accessories of the voyage. Displacement (loaded) is the weight of the ship including those factors.

Cargo capacity tons is the number of tons which remain after deducting fuel, water, stores, dunnage, and other such items necessary for the voyage, from the deaweight tonnage. Bale cubic capacity is the space available for cargo, in cubic feet.

(Merchant Marine Institute)



Concrete ship reinforcements being prepared for pouring of cement at Concrete Ship Constructors yard.

Joshua Hendy Training

Charles E. Moore, president of the Joshua Hendy Iron Works, recently announced the appointment of Di George T. Avery as director of the department of employee training Di Avery, on leave from the C bardso State College, where he is dean of the summer session and head of the division of vocational training, has taken an active part in vocational education for 25 years

Prior to his appointment, Dr Avery headed a committee composed of H. C. Gunetti, A. A. Browne, G. T. Avery and Lieut. Comdr. Charles W. Cox of the Naval Air Base at Alameda, which made an educational survey of the Hendy plant. The needs were ascertained by this survey and a program drawn up.

This employee training program now being put into operation includes job instruction training, as recommended by the U. S. Maritime Commission, which stresses the principle of how to teach new men to do their jobs competently. This part of the program has been in operation since February 15, and 500 employees have completed the course. Other parts of the program are the followthrough plan, a check on the progress being made of individual instruction, foremanship training, job methods training, which involves the development of new and more efficient methods, general training for new employees, and special courses in such subjects as production control, production engineering, tool engineering, cutting tool engineering, jigs and fixtures, and procedures and methods.

A new building will shortly be erected at the Sunnyvale plant to house the full training program. It will be a two-story structure with offices, a training machine shop, lecture and conference rooms, and a complete motion picture theater.

Maritime Production Welding Courses

Held at The Lincoln Electric Company, Cleveland, Ohio, the series of courses is designed to assist the shipyards to increase their welding production and thus speed the launching of badlyneeded cargo carriers.



Welding supervisors, feachers and leadermen attending Second Maritime Production Welding Course at the plant of The Lincoln Electric Company in Cleveland, Ohio. Representatives of 13 shippards attended this course.

The Maritime course is one week in length, and in the two courses which have already been held, shipyards from all corners of the country have been represented. During the two meetings, one man from the Maritime Commission and fifty nine men from shipyards from Maine to Florida, from Oregon to the Gulf, attended.

Procedures for all kinds of are welding being done in the ship-yards are not only studied but actually practiced and perfected. The mornings are devoted to lectures, demonstrations and conferences, while the afternoons are spent in the welding of typical ship joints.

Originally designed for welding instructors and training supervisors, the course has been extended to be of interest and value to foremen, leadermen and other welding supervisors actually on production in the shipyards. Several welding engineers have also attended.

An important phase of the work in Cleveland has been the study of the Fleet Fillet welding process, which has so greatly increased welding production wherever it has been introduced. In one large Western shipyard, with eleven ways, a changeover from conventional technique to the Fleet-Fillet process doubled

downhand fillet welding footage per day.

An outstanding nine-way ship yard on the East Coast, building EC 2 cargo steamers, estimated that introduction of Fleet Fillet in only a portion of its yard resulted in a 35 to 40 per cent saving in total fillet welding time.

The third Maritime Production Welding Course was held during the week of April 12, with additional courses to be held at two to three-week intervals.

CALSHIP TRAINING

(Continued from page 85)

tion to leaderman, supervisor or fore

It is a matter of regret and yet of pride with the administration at Cal ship that many of the student body, so to speak, of this up-grading school are given good jobs in other ship yards or industrial plants, even be fore they graduate. The student who has ambition enough to take a rather stiff course on his own time, after eight hours of work on a shippard shift, is very apt to be a good man on any job.

In the up grading school, the courses require considerable application on the part of the student, and the standards of work are maintained at a high level. What the student can do in this school is entirely a matter of his or her aptitude and the amount of time he or she is willing to devote to the work. There is always a waiting list of applicants for the various courses



Castings For

by Herbert W. Kelly

HIPS and more ships is the cry in these critical days, and the demand for dependable castings for engines and equipment becomes more acute and must meet wide and varied specifications.

Castings for Liberty, cargo and Victory ships for the Maritime Commission must have engineering properties that will do the job under the freezing blasts of the Arctic, the excessive heat of the tropics, the corrosive powers of the waters of the seven seas, as well as the changeable atmospheric conditions of the Great Lakes regions.

Everyone is more or less familiar with the epoch-making shipbuilding records of the Henry Kaiser Shipbuilding Companies, and has heard

The author is with Mechanite Metal Corporation,

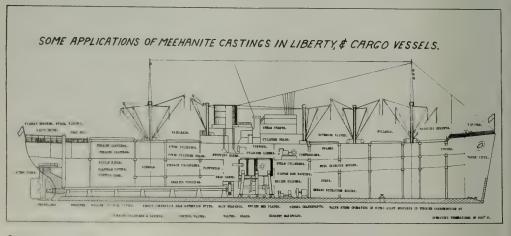
or read of some of the remarkable feats of speed in the construction of ships by other American shipbuilding companies. Liberty ships, cargo ships, and now Victory ships, have been and are now being constructed from San Diego to Seattle, from Canada to the Gulf of Mexico, and on every waterway, inlet or bay of the Great Lakes, from Ontario to Superior. Ships of some type are under construction in every body of water deep enough for launching that has an entrance to the sea.

In view of all this, most shipbuilding today resolves itself into mammoth projects of assembly. Engines, boilers, piping, machinery and other equipment parts are being built and partially assembled at great distances away from the yards, and then

shipped to the points of assembly in all parts of the United States and Canada. With these parts fitted in, the hull, completed in assembly details and sponsored in the proper manner, is launched for service in the war effort.

Mechanite foundries throughout the United States, in Canada and in Great Britain, are contributing their full share in the production of cast parts for equipment so vitally needed for the fast production of these ships. (See drawing.) A partial list of such Mechanite castings now being produced for this purpose includes:

Auxiliary hoists, bearing housings, bedplates, bollards, chocks, compressors, cylinder liners, cylinders and heads, diesel engine parts, engine columns, engine crankshafts, exhaust manifolds, fairleads, flywheels, frames, full injector bodies, gears, gear cases, grease extraction bodies, hause pipe, main bearings, pistons, power cylinders, propellers, pumps, stern tubes, surface condensors, stuf-



American Ships

fing boxes, turbines, valves, winches, wild cat engines

Basically, Mechanite and steel are similar in that the matrix structure of both is comprised of pearlite. The essential differences are found in the presence of free graphite in Meehan ite and in the disposition of the mi cro-constituents. Mechanite is one of those materials whose widespread use and acceptance, before the emergency in vital industries here and abroad. pointed the way to less difficult transitions in manufacturing methods and products by virtue of its flexibility, its wide range properties, and its unique position as the material which bridges the gap between cast iron and steels by combining the better properties of both.

In the production of Meehanite castings, such as listed above, the General Engineering Types are used. In this group, tensile strengths range up to 55,000 lbs. per square inch, and the material can be readily heattreated to yield over 70,000 lbs. per square inch and to develop moduli of elasticity up to 23,000,000 lbs. per square inch. By means of heat-treatment, certain of these types of castings can be greatly hardened or toughened. Furthermore, the Meehanite metals have an unusual damping capacity, high fatigue strength, superior compressive strengths, and predeterminable Brinell hardness.

In addition to the General Engineering Types, a wear-resisting type of Meehanite metal provides what is perhaps one of the outstanding contributions of the Meehanite processes to the users of castings. In this group, specific wear problems are solved by specific types of Meehnite metals which, through years of successful service, have been proved dependable for the particular application requirements. Likewise, certain heat-resistant and corrosion-resistant types have been perfected. All of the several processes of Meehanite castings

Assembling a 1350-hp triple-expansion 3-cylinder engine for the Maritime Commission. All castings are of Mechanite Metal.

the pointed index true contailingued control, with physical properties prodetermined according to the specific service that may be required

Maritime Commission's Annual Report

The United States shipbuilding industry has smashed every world record for volume shipbuilding, according to the Maritime Commission's report of March 29. Production requirements not only fulfilled the 1942 mandate of President Roose velt for eight million tons of shipping, but exceeded this amount greatly.

It is expected that the production before the end of 1943 will be more than doubled. The Maritime Commission has announced that the goal for 1943 has been set at 19,000,000 deadweight tons, and adds that this can be stepped up to 20,000,000 dead weight tons or the approximate present shipyard capacity, if materials and labor are available.

Admiral Emory S. Land, Chairman of the Commission, disclosed that a total of 8,090,800 deadweight tons of merchant shipping were placed in service in 1942, but this did not include some 800 smaller craft and



other vessels delivered to the are. I forces. Of this production there were:

- 746 Victory ships
- 542 Liberty ships
- 63 Tankers
- 5 Ore carriers
- 62 Long Range C. Type ships
- 55 Cargo vessels for Great Britain
- 5 Coastwise ships
- 15 Special type craft

The first Liberty ship was launched from the Bethlehem Farrfield Singyard, Baltimore, in December, 1941; it was christened the Patrick Honry. On May 25, 1943, the S. S. Robert Lowery was delivered by the Delta Shipbuilding Corporation at New Orleans, thus making the 10 orth American Liberty ship delivered into service, and these ships are now being launched at a rate approaching four a day. Ships of all types have reached a delivery rate of five a day

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A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome St., San Francisco, California

Dear Skipper:

I have always, and with great interest, read your enlightening column in the Pacific Marine Review, and should like to avail myself of your invitation to come forward with questions. I have the following problems which I would like to have clarified:

(1) What is a shipowner's liability towards an American sailor, or a foreign-born sailor with first papers, on an American ship, who, due to illness, must be signed off in a foreign port, besides paying any medical expenses which are necessary? (a) Is it the shipowner's obligation, under law, to repatriate an American sailor to a U.S. port?

(2) Is a shipowner under obligation to repatriate an American sailor who has deserted the ship in a for-

(3) What is the shipowner's liability in case of the death in a foreign port of a crew member, when such death occurs while the crew member is being repatriated, for owner's account, after the loss of the ship due to enemy action? (a) Do wages go on until time of death?

Yours very truly, KH

We shall first look up the laws on these questions, and then taking them one at a time, endeavor to answer them fully. This is perhaps the most involved part of maritime law, for cases to establish precedent are many and varied, and so many of these de cisions hinge upon the old belief and practice that seamen are "wards of the court" and are to be treated as

Discharge in Foreign Ports R. S. 4580 (46 U.S.C. 682). Upon the application of the master of any vessel to a consular officer to discharge a seaman, or upon the application of any seaman for his own discharge, if it appears to such officer that said seaman has completed his shipping agreement, or is entitled to his discharge under any act of Congress or according to the general principles or usages of maritime law as recognized in the United States, such officer shall discharge said seaman, and require from the master of the said vessel, before such discharge shall be made, payment of the wages which may then be due said seaman; but no payment of extra wages shall be required by any consular officer upon such discharge of any seaman except as provided in this Act. (46 U.S.C. 221, 658, 682, 683, 684, 685, 703) (June 26, 1884 sec. 2).

Consular Officer Penalty

R. S. 4581 (46 U.S.C. 683). If any consular officer, when discharging any seaman, shall neglect to require the payment of and collect the arrears of wages and extra wages required to be paid in the case of the discharge of any seaman, he shall be accountable to the United States for the full amount thereof. The master shall provide any seaman so discharged with employment on a vessel agreed to by the seaman, or shall provide him with one month's extra wages, if it shall be shown to the satisfaction of the consul that such seaman was not discharged for neglect of duty, incompetency, or injury incurred on the vessel. If the seaman is discharged by voluntary consent before the consul he shall be entitled to his wages up to the time of his discharge, but not for any further period. If the seaman is discharged on account of injury or illness, incapacitating him for service, the expenses of his maintenance and return to the United States shall be paid from the fund for the maintenance and transportation of destitute American seamen: provided, that at the discretion of the Secretary of Commerce, and under such regulations as he may prescribe, if any seaman be incapacitated from service by injury or illness is on board a vessel so situated that a prompt discharge requiring the personal appearance of the master of the vessel before an American consul or consular agent is impracticable, such seaman may be sent to a consul or consular agent, who shall care for him and defray the cost of his maintenance and transportation, as provided in this paragraph. (June 26, 1884, sec. 7; April 4, 1888, sec. 3; Dec. 21, 1898, sec. 16; Mar. 4, 1915, sec. 19).

Now as to interpretation of the law as affecting question No. 1. The laws quoted would cover that part of the question regarding the seaman's wages, provided the seaman willingly signed off the articles of agreement in a foreign port, in the presence of a consular officer, thus terminating the agreement he made in signing the articles. As a matter of fact, the termination of the agreement between him and the master as approved by the U.S. Consulate would end all obligations from one party to the agreement to the other, provided, of course, the termination of the agreement was based on mutual consent. On this basis the company would not be liable for even his medical ex-

If the seaman did not sign off the articles, but was sent ashore for treatment, the terms of the "Shipowners' Liability (Sick and Injured Seamen) Convention, 1936," would be subject to being invoked, and the man would be entitled to medical care and to repatriation as stated in those articles.

In regards to this convention the following note is pertinent: "The ratification of this treaty was deposited on October 29, 1938, and became effective on October 29, 1939. While some of the provisions of this treaty appear to be self-executing, it would seem that in order to make effective the provisions of the treaty as a whole, enabling legislation to this end must be passed. To date no such enabling legislation has been enacted. (Dec., 1942)."

Therefore we may sum up by saying that the answer to this question is quite clearly given in the law if the seaman who was ill paid off willingly, by no stail consent, and with the inprovides the American Consular of ficult to that event, the shopers of would relonger be obligated to him in any way. It is more than likely however, that such a usular otherd would entorce the time of the convention quoted above, thus making the slap wher hible to pay full wires as how as the sick or injured person remains on board (always provided the diness was incurred in the service of the ship, not incurred due to will ful act, detault, or misbehavior of the seaman, sickness or inpury was not in tentionally concealed when articles were signed; and the seaman did not refuse to be medically examined dur ing the period of engagement), to defray expenses of medical care and maintenance until sick or injured per son has been cured, or until sickness or incapacity has been declared of a permanent character, to give the sea man any benefits granted by any in surance or workmen's compensation for accidents, etc., as are applicable, and to repatriate the sick or injured seaman, if landed during the voyage due to such sickness or accident, or to defray burial expenses if the seaman dies on board, or ashore while entitled to medical care and maintenance at shipowner's expense.

As far as we can determine from the law, there is no distinction made between a seaman who is a citizen and one who has his intention or first papers only.

Desertion

For desertion a seaman forfeits all or any part of the clothes and effects he leaves on board and all or any part of the wages or emoluments which he has then earned. R. S. 4596 (46 U.S.C. 701), December 21, 1898, sec. 19; March 4, 1915, sec. 7; August 1, 1939, sec. 6.

Question Number 2, therefore, can be answered "No," provided desertion can be established. The essence of desertion is intent. In recent years in both the Navy and the merchant service it has become established that a man who misses his ship is not of necessarily a deserter, but is a strageler, or was left behind.

Because it is so difficult to prove the intent, desertion, unless it take place while the ship is still in port, and the seaman removes his personal effects from the vessel, and expresses his intention of not returning to the ship can hardly ever be established.

If desertion can be established, the seaman has forfeited all rights and claims against the ship; therefore the shipowner cannot be under any obli-

The state of the Cycle of the C

Loss of the Ship Due to Enemy Action

the third question isked would depend one to the dyupon the article which the some assumed at the comment ment of the verge Under navigation law the seamon's wages terminate upon the loss of the ship

It the man were sick or impred between the time specified in the articles of agreement for reporting for duty and the termination of the voyage, the shipowner would be hable as covered in the answer to question one. The shipowner shall be liable to defray burial expenses of death occurring on board, or in the case of death occurring on shore, if at the time of his death the deceased person was entitled to medical care and maintenance at the shipowner's expense.

Terms of the articles would have to be known to give the correct answer to a specific case. It would also be necessary to know if the seaman were sick or injured while in the employ of the shipowner. In a case of this kind, undoubtedly illness or in-

jury preceded death.

Wages go on until the time of death, unless the voyage has been terminated before the time of death, and the termination of the voyage based on law is at the instant the vessel is declared lost, unless the articles call for some other provision, in the event of the loss of the vessel due to enemy action. In such eases the articles of agreement between the master and the seaman govern

Cargo and Ship's Stability

With the numerous reports coming in to "The Skipper" about stability and seaworthiness of ships due to wartime conditions, we felt that as we are discussing laws in this article this would be a good opportunity to call to the attention of all masters again the existence of the article on cargo loading, stowage and inspection contained in Chapter II, Title 46, of the Code of Federal Regulations, 153.27

If it is the control of the control

The article puted place a very scrious responsibility up in the master of a ship these days mot that he did not always have this responsibil ity, but in days gone by along with this responsibility he had experienced people all along the line to help him to assume it Today, with experi enced officers, supercargoes and steve dores spread very thinly along the waterfront, and with problems of greater magnitude than he ever encountered in established peace time trade routes, the master has a job to do requiring the greatest care and judgment.

Wartime cargoes consist of heavy military equipment and explosives of all kinds, and these are loaded under conditions which often make close check or inspection very difficult Because military expediency often requires that a great portion of the cargo be available for discharge at any port, in any order, the loading authorities are often more concerned with this problem than they are with problems of seaworthiness.

Yet seaworthiness is most important, especially after a ship has steamed a considerable distance and her bunkers are getting low.

Masters should instruct their cargo officers that they are to be especially careful during the loading operation to prevent, at the time of loading, the stowage of any cargo in such a manner that it may endanger the ship, or other cargo, at any point in the voyage that she is about to under take. The U.S. Coast Guard wishes to remind cargo officers that should difficulties arise which necessitate action, the district Coast Guard office should be immediately informed by telephone in order that officers may be detailed to assist the ship's officer in securing compliance with his re-

As a shipmaster, you have a big job to do, and you must do it carefully and well if you do it at all.



by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pocific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

VIII-Electric Propulsion Equipment (cont.)

PROPULSION MOTOR

Before the propulsion motor is placed in operation, the insulation resistance of the windings should be tested to determine whether sufficient moisture is present to require that the windings be dried out. The procedure to be observed is the same as that given for testing and drying out the main generator.

If it is necessary to place the motor in operation without testing to determine whether drying out is necessary, the motor should be operated at the lowest possible voltage until it has heated sufficiently to indicate that the windings are dry.

Temporary Repairs to Windings

The appearance of smoke or arcing within the motor indicates a break-down in the stator windings, and the motor should be shut down immediately and the ends of the coils inspected.

If any coil is excessively hotter than the others, both leads of this coil should be disconnected from the remainder of the windings and all four open leads should be insulated with rubber tape and securely tied to prevent movement. The defective coil should then be opened completely by cutting through the end with a backsaw; much care should be exercised in doing this to avoid damaging other coils. The coil may be cut more safely at the end which is free from connections.

The motor may be started up after the coil has been out out and, if this repair has eliminated the trouble, the motor may be operated at any load up to about 80 per cent of normal.

In case a group of coils shows evidence of excessive heating, the motor should be run at a low voltage for about 15 to 30 minutes, or until the signs of overheating reappear, and should then be again inspected in an effort to locate definitely the defective coil or coils. If more than one defective coil is found, the same procedure should be followed in cutting out each coil. If two or three coils between one pair of adjacent pole leads are cut out, the reduction of power remains as stated above, about 20 per cent below normal; but if the coils are cut out of more than one such section, the power will be reduced about 20 per cent for each section thus affected. This is explained by the fact that there are 5 parallel circuits between terminals of each phase, such as T2 and T5 in the accompanying figure. T1, T2 and T3 go to the generator. T4, T5 and T6 are tied together.

Temperature Detectors

There are six temperature detectors in the propulsion motor stator slots. These coils are located in three groups of two each, in adjacent slots 120 mechanical degrees apart. The detector which gives the highest reading in each of these three groups is connected through one of the selector switches on the propulsion panel to the temperature meter. These coils are connected to the selector switch through a disk-film cutout protective device, which breaks down and

shorts out the device if high voltage is accidentally applied.

In case temperatures exceed 100 C., or are on the red part of the scale, it is necessary to reduce the load by slowing down the main turbine generator. If these temperatures are high, it is suggested that the voltage and frequency be checked, since the overheating may be due to the voltage being below normal.

Collector and Brush Rigging

Self-lubricating graphite brushes are used, and are held against the collector rings by springs set to give a brush pressure of about 2 lb. per sq. in. This pressure should be maintained as the brushes wear.

Field Excitation and Load

The amount of load carried by the propulsion motor without falling out of synchronism depends on the amount of field excitation on both the motor and the generator. Increasing either field, or both fields, increases the amount of load that can be carried; decreasing either, or both, decreases the amount of load required to break the motor out of step. It is therefore necessary that sufficient excitation be carried to maintain the motor in step, and care should be exercised to maintain the excitation at such a value that abnormally high heating does not occur with the consequent lower efficiency.

Heating Coils

In order to prevent the accumulation of moisture in the windings during periods of idleness, strip heaters are located within the motor. During such periods the air ducts should be closed and strip heaters turned on to maintain a temperature slightly warmer than the room temperature. This prevents condensation on the inside surface of the motor, and especially on the insulation of the stator and rotor windings.

Motor Bearings

The two pedestal-type babbittlined motor bearings are split horizontaly to facilitate assembly and disassembly, and each is clamped to its seat by its bearing cap. The bearinglining halves are not interchangeable with those of another bearing; therefore, when ordering renewal parts, order both the top and bottom halves of a bearing lining.

Oil from the ship's gravity system enters at the top of the bearing and is carried in a groove down and around the journal to the centerius where it is directed through as axial gives except the largificant the reading. The 0d passes out the control large in the fact on of process large in the cases at the isomer O' | || 2 the one is previously as the oil to the teating housing.

President smooth for the idenses a of catter, thousand to the materials and that it, system in case of fire

Ventilation

As adia sted in the outline view, the cach sed ventilating system in cludes a surface air cooler located just the way the machined centerline and a motor-driven fan located near the top of the machine. The fan draws the hot air from the top of the machine and delivers it down through the cooler to the bottom of the motor frame.

The stator resistance from terminal to neutral is .0116 ohm at 25 C.

The motor field (rotor) resistance at 25 C. is .215 ohm.

SURFACE AIR COOLERS

There is a surface air cooler for the main generator and one for the propulsion motor. The coolers are alike except for mechanical features affecting the water boxes: the former is the double-tube, and the latter is single-tube type.

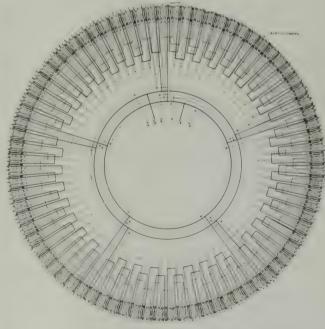
Water should be passed through the cooler immediately on starting the generator, whether or not excitation is on the field.

When placing the cooler in operation for the first time, it should be watched to see that the water flows freely through each section and that there are no leaks. The air duct should also be examined for leaks and repairs made if necessary. The temperature of the generator should be watched for a sufficient length of time to make sure that the system is working properly. Careful readings of the entering and discharge air temperatures should be obtained. These readings should be obtained at different places in the air duct at least one foot away from the cooler.

An inspection should be made at least once each week, giving special attention to water and air leaks. The nuts and bolts on the water boxes

(Page 108, please)





Propulsion-motor stator-coil diagram. Note: There are two slots per pole per phase,

Pacific Shipping News

By Special Correspondents



APPOINTED

Charles M. Sigle, who was recently appointed general manager of the Winslow Marine Railway & Shipbuilding Company, is a graduate of Oregon State College in mechanical engineering. He joined the staff of the Williamether Iron & Steel Corporation in Portland, Ore., and became assistant engineer. He was employed by the Steel Tank & Pipe Company of Portland and by the Birchfield Boiler Works of Tacoma prior to joining the Williamette Company.

Honors for American Masters

In honor of Captain William Fisher, who retired recently as supervising merchant marine inspector for the Coast Guard at San Francisco, the U. S. Maritime Commission's Cadet Base School parade and drill grounds at San Mateo have been named Fisher Field.

Captain Fisher held one of the highest places in the merchant marine service for the Federal Government. He was one of the first Americanhorn skippers to command a large United States liner. The vessel was the old Pacific Mail liner Korea,

Captain Fisher had been in charge of Seattle offices for the Federal Steamboat Inspection Service before being assigned to the San Francisco district. He was forced to retire recently by the 70-year-old age limit.

Hone the first steamboat pilot

to navigate the Upper Columbia and Snake Rivers, the 199th Liberty ship to be sent down the ways of the Oregon Shipbuilding Corporation was christened the S. S. Ephriam W. Baughman. Captain Baughman pioneered the river route from Lewiston in 1861, when a gold rush to the Orofino, Idaho, district was setting in.

Admiral Nichols

Rear Admiral Neil Ernest Nichols, 63, former superintendent of the California Maritime Academy at Tiburon, died recently in the San Diego Naval Hospital. He was a one-time chief of the Naval Reserve division of the Navy Department. He was appointed superintendent at Tiburon in 1937 and remained there until July, 1940.

Calship Record

California Shipbuilding Corporation is claiming three world's records in ship construction during the month of June. These are: twenty 10,500-ton Liberty cargo ships delivered in June, the greatest number ever delivered from one yard in one month; 211th ship delivered, the largest number of such ships delivered from any one yard; and 217, the largest number of such ships launched in any one yard.

On June 30 two were delivered and two launched. During the last 16 days of the month, 14 Liberty cargo steamers were delivered to the Maritime Commission. For the whole month, the average was a ship delivered every 36 hours. This is a gain of exactly 4 per cent over the month of May, when the big yard delivered E-C-2 ships at the rate of one every 37½ hours.

If this rate of improvement continues, California Shipbuilding Corporation will be delivering a big freight steamer every 30 hours before the end of 1943.

Triple Launching

Consolidated Steel Corporation yards at Long Beach and Wilmington launched three large ships in 2½ hours and put on a great show to celebrate the winning of the Maritime Commission "M" burgee on May 29.

At 3:30 pm the show began with the sidewise splash of the C-1 cargo steamer S.S. Cape Friendship at Long Beach. This 12,900-ton vessel was sponsored by Mrs. Carl Hinman, wife of the California Congressman, who, together with her Matron of Honor, Mrs. Robert McCurdy, was introduced by Alden G. Roach, president of Consolidated.

Immediately following this launching, the party was moved to Wilmington under motorcycle escort. Here at 4:45 Admiral Emory S. Land, chairman of the U. S. Maritime Commission, made the address of the day and presented the "M" flags to Lloyd R. Earl, Consolidated vice president in charge of production; and token "M" pins to two shipyard employees.

California's Governor Earl Warren was introduced and made an address, and at 5:30 Mrs. Warren smashed a bottle of champagne on the bow of a poised cargo steamer, naming her S. S. Cape Isabel and sending her down the ways into the channel. Matron of Honor was Mrs. Frederick Houser, wife of California's Lieutenant Governor.

At another way in the same yard, the U. S. Frigate Glendale was ready for the big slide and the party moved over to watch Miss Shirley Schlictman, president of the student body at Glendale Junior College, christen the new ship.

The batting average of Consolidated, in the winning of Federal awards, is now 100 per cent. The Navy "E," the Army-Navy "E," the treasury "Bulls Eye," the Maritime "M" and the Victory Fleet flag have all been won by the plants of this progressive firm.

A Busy Boat Yard

Officers of Washington Beat Works, which have been building small craft for the Novy, the Coast Guard and the Maritims Commission, on June 12 staged an unusual launching celebration when they sent their 59th United States craft into the waters of Lake Union.

Employees of the yard and members of their families were the launching guests as the first 45 foot Navy picket boat of an order for 20 went down the ways. The sponsor was Ruth Lind, 15 years old, daughter of Osear Lind, a shipwright employed in the yard.

The Washington Boat Works received contracts from the Government totaling more than \$1,000,000 since it established its present plant on Lake Union in 1939, including 14 patrol boats for the Coast Guard, 10 aircraft-rescue boats for the Navy and 34 training boats for the Maritime Commission. As soon as the 10 picket boats now building are all in the water, work will be under way on 10 more of the vessels.

Tide Land Ownership

Colonel W. C. Bickford, general manager and chief engineer of the Port of Seattle, and Glenn J. Fairbrook, Seattle port counsel, attended a meeting in San Francisco on June 21 at which Government condemnation of waterfront property for use by the Army and Navy was discussed. Attorneys and engineers of all ports on the Pacific Coast were in attendance. Government condemnation proceedings involving Smith Cove Piers 40 and 41, now used by the Navy, set for September 8 in Seattle, were under discussion, as port authorities realize that if these piers are taken over the door would be open to Government seizure of any and all civic-owned and privatelyowned port facilities on the Pacific The Government theory is Coast. that submerged tidelands belong to the Federal Government rather than the states, including slips and piers at shipping terminals dredged and built at an expense of many millions.

The ports are willing to lease shipping facilities to the Government for as long as the war emergency exists,

to the that where the war is near the could be proved by the take the the take the t

The trans that the Covernment of the Debut of the About three years are Service Caridd P. Nee of South Debut out should be resolution in Characteristics as statistically the principle, but it was killed. During the war emergency they been revived. The theory of Government ownership will come up for consideration at the condemnation hearing in Seattle on September 8.

Largest Wood Shipbuilding Yard

Barbee Marine Yards, Inc., has completed the work of moving 5000 tons of machinery, equipment and buildings from Bryn Mawr on Lake Washington to the site of the new Barbee plant on the east shore of the lake at Kennydale, where this firm is building the largest shipyard for the construction of wooden vessels on the Pacific Coast, and is at work on eight large wooden barges for the U.S. Army. The site is a 32-acre tract purchased from the Colman estate. which has owned the property since 1867. The new shipyard, hown out of the forest on the east shore of Lake Washington, will have 1600 feet of waterfront and deep water along its entire breadth. The plant of the Seattle-Renton Mill Company, which was purchased by the Barbee Company, has been moved from Bryn Mawr to Kennydale, and will be operated on the shipyard site, where the firm will cut its own lumber. The work of constructing the shipyard included the driving of 2300 piles. This new yard has ten ways.

Tuna Pack Running High

Notwithstanding the fact that the Navy has taken the cream of the long-range tuna boats and the catch must be procured by the few big clippers aided by a fleet of converted purse seniers, small ing boats and some make shift packets fitted out with bait tanks and pumps, the pack of tuna to the first of May is running about double that for the same period in 1942. According to figures released by the American Fishermen's Tunabout Association of San Diego, the pack for the first four months of

the year was M, IM, 45 points of all core and transcription of with 7.457-414 possible for the Aris Society mentils at 1941.

Todd Expansion

Todd Scattle Dry Down I purchase I the Herrory I to Werks and dry Log plant of Dharbor Ave. S. W. Scattle I plant represents an investigation than 825 mondered dock of the und shop feedbase Pocupus 20 acres of land with a Leont frontage on Scattle Harbor.

The plant has been excuped; and rental basis by the Todd Congress pending completion of the sale Blore the war it was used by the Alaska Steamship Company for ship repair work.

Mine Sweepers Launched

British Columbia business I of riswho attended a Pacific Northwest economic conference in Souttle on May 20 were the guests of honor at the launching of two steel mine sweepers built for the British Navy at the yards of Associated Shipbuild ers in Seattle. The vessels were christened the Florized and Foam by small daughters of employees of the shipbuilding company.

H. M. S. Florizel being launched, to be followed two hours later by H. M. S. Foam. The "'swing-shift" was able to attend the night launchings in force.





New And

Pickling yard and tanks in rear view of paint booths.

Shortly after the beginning of the war, the United States began a shipbuilding program of unprecedented proportions which since that time has increased until it far surpasses original expectations. A great many shipyards have been built in every Coast area, and many manufacturing concerns within these areas have been called upon to equip their plants to handle work of all types in support of the Naval program. While some of this work has been entirely foreign to the standard manufacturing processes of these concerns, other work readily has fit into the various plants and has replaced domestic production curtailed by the war program.

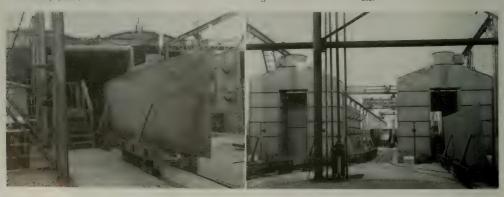
Hot dip galvanizing, as it applies to the problems of marine construction, has, or course, become an item of major consequence, for its value has been long recognized as one of great importance in the protection of exposed steel surfaces where it could be applied without difficulty.

For many years, Emsco Derrick &

Equipment Company has been engaged in the galvanizing business. Its name has been symbolic of excellence in quality and service. As the demands for galvanizing increased, the company was in an admirable position to handle this work for the Navy through the shipyards. As the shipbuilding program gathered momentum, however, it was found that existing facilities were inadequate to handle the large sizes of plates which the Navy program required. Application was made to the War Production Board, and permission was received to build a plant of sufficient size and capacity adequately to handle all galvanizing work that would be required. Every effort was made to assure the prompt, efficient handling of hull and armor plate, and the new plant, which has been in operation for approximately two years, is the largest and most modern of its kind. It has been operating on a 24-hour-a-day basis on Navy work. In addition to the galvanized steel that is necessary in a ship, there is considerable steel that goes into the various welded, assembled structures that does not require galvanizing, or that cannot be galvanized before assembly. Necessarily, all steel within the ship must be protected to preserve it from the effects of corrosion and oxidation. First, it is necessary to remove all scale and rust so that the paint can be applied to the clean, parent metal. It was a slow, costly and unsatisfactory process to clean these structures after they were assembled in the ships, so it became necessary to do this operation prior to fabrication. Also, it has been established that the removal of scale and rust prior to welding is greatly beneficial to the welding procedure, making stronger welds and reducing the cost of welding. To provide this service, Emsco has operated a pickle and paint plant for the last year and a half, but, as in the case of galvan-

> Left: Rear view of paint booth—unpainted plate just entering.

> Right: Both spray booths, with an unpainted plate just emerging from one.



Pickle Paint Plant

taing, the facilities became overticed. In order to handle the increasing demands, a new pickle and paint plant also was installed. It is a very well equipped and modern plant, assuring quick, dependable service combined with the best possible workmanship

The methods used in Navy yardsthroughout the nation, and in large private plants of a like nature, were studied with extreme care, and all desirable features embracing pickle and paint operations were embodied in the new plant. Productive capacity has been increased manyfold over the previous facilities.

The process of pickling and painting consists of many steps. First, the steel is placed in an alkaline solution heated to a boiling temperature. This operation removes all oil, grease, mill markings, etc. The steel is then re moved from this bath and washed clean with running water. It is then placed in a bath of dilute sulphuric acid heated to 175° F. This bath also contains an inhibitor which retards the action of the acid on the surface, thus preventing etching of the steel. It is left in this bath until all scale and rust has been removed, and is then again thoroughly washed with clean running water. The final bath is in a dilute solution of phosphoric



Drying and shipping yard





acid heated to 200° F. It is then removed from the bath, dried, and painted with zinc chromate paint. The paint is applied by the spray

method in modern air conditioned paint booths. After painting, the steel is placed in racks for drying in spection and final shipment.

Left: Pickling tank, showing a steel plate about to be dipped. Right: Painted plate emerging from the paint booth.





Keep Posted!

NEW EQUIPMENT AND MACHINERY FOR YARD, SHIP AND DOCK



New Connecting Rod Boring Machine

Specialized Boring Machine

A new connecting rod boring machine has been introduced by Century Engineering Company, Los Angeles, manufacturers of bench type boring machines. This new machine is simple to operate, light enough for easy transportation, and yet maintains the close tolerances required. It can be operated by any aircraft engine mechanic in a short time and will do a job comparable to finest factory work, holding tolerances within the limits established by the engine manufacturer.

The part to be bored is fed into

the boring bar with a hydro-pneumatic feed. To bore a rod, space bars for the specific rod are used to set the rod centers. The rod is then placed in position on two mandrels and held until the self-centering and self-equalizing clamps are tightened. These clamps prevent any stress on the rod. The mandrels are then removed and the first hole is bored. Without moving a part, the entire fixture is moved to the second position by means of a handwheel which operates the cross slide, and checked with the dial indicator. The second hole is then bored.

Century boring machines are now in use in a large number of aircraft and industrial plants and are in repair depots of the U.S. Armed Forces.

"Home Front" Production

No military secret is the fact that Fuller Paints are "in action" on all fronts. With the company's aircraft finishes directly helping to finish off the Axis, and many another product a factor in protecting and maintaining America's war plants, the West's largest paint manufacturers are "all out" for victory.

But Fuller hasn't stopped there. On the home front, too, it has been doing more than merely supplying paints to keep homes in repair. For months it has been devoting its large billboard space throughout the West to promotion of home front activities that concretely help to win the war.

For example, the fourth in this series currently appearing is a colorful 24-sheet poster designed to re-cruit help for the harvest fields and the canneries.

Posted in communities where fields and orchards will soon be ready for the crop corps, these billboards will carry the appeal, "Help Harvest— They Need You." What's equally important, this advertising will appear at the time it can do the most good; posting dates have been worked out with respect to varying harvest seasons in the different localities.

For certain other communities, where the canneries are the ones who face labor shortages, this poster is revamped to aid them. Here it will say, "Want a War Job? Help Now in the Canneries.'

A Convenient Welding Positioner

Designed to handle loads up to 500 lbs. with the center of gravity of load 6" away from the table top and with a 6" eccentricity, the new 500-lb. capacity welding positioner introduced by the Ransome Machinery Company, Dunellen, New Jersey, has many features worthy of note.

These Positioners are available in hand- or motor-operated models and are particularly suited to work ordinarily handled by women welders. The motorized unit includes a Reeves variable - speed drive providing a speed range up to 1 rpm of the table top. Tilting range is a full 135° from



Welding Positioner

KEEP POSTED!

The manufacturers of the new equipment announced in this department will be pleased to furnish complete details without obligation on your part. For quick service, please use this coupon.

PACIFIC MARINE REVIEW

500 Sansome Street - - -San Francisco

Send me descriptive data of the following new equipment as reviewed in your issue

(Identify by name of manufacturer and machine)

NAME BUSINESS

ADDRESS

Lore and or 45 beyond certical provising the "down under posit in for all d withand welds."

The 16" character circular table top is T slotted, simplifying the clamping at work to it. All gears are at the out tooth type. The machine can be turnished with a regular base for bench work of with a sub-base giving a height adjustment from 27" up to 42" from the floor line to the table top.

Serviron-a Plastic Paint

A germanently plastic material which is applied like paint to prostect boiler drums, metal, wood or concrete storage tanks and water submerged surfaces against corrosion and fungus growths, is described in a new bulletin just published by Saverite Engineering Co., Hoboken, N. J.

Since it never dries hard, Serviron stretches and contracts with tempera ture changes, eliminating the danger of hairline cracks in the coating, which would permit undetected corrosion under the protective surface. When applied to already pitted surfaces, it stops any further pitting. It will not melt, freeze, crack or peel at temperatures from below freezing to 500-550° F.

The material is widely used wherever clean, rust-free water is required, such as in drinking-water tanks, power plants, ships, schools, hospitals, laundries and process industries. It also withstands certain acids, brines and caustics, and may be used to coat valves, ammonia lines and underground pipes and tanks. It is odorless and tasteless, and is safe to apply in enclosed spaces, as it does not give off any obnoxious or dangerous gases. For best results, it is applied directly to the surface in one coat, without primer coat. Its porepenetrating action forms a perfect, waterproof bond which cannot be jarred loose. For full details, write Saverite Engineering Co., 2004 Clinton St , Hoboken, N. I.

Industrial Thermometer Design

Motivated by a desire to save critical metals in war time, Taylor Instrument Companies, Rochester, New York, have designed, tested in the field, and are now introducing a onepiece industrial thermometer.

The one-piece case is shallower, which makes it possible to see the mercury column through a wider angle i vision. The chromium-plat-

of the control of the

These improvements, combined with permittent accuracy, responsiveness to charge in temperature, and durability, plus a saving of tons of citical bronce, to the new instrument of great interest to industrial thermometer users



The company has announced further that the new instruments will be equipped with easy-reading Binoc tubing. They will be furnished in many combinations of strught and angle stems, with threaded or union connections, and in many standard temperature ranges.

Man Overboard Floating Lantern

The F. W. Wakefield Brass Co., Vermilion, Ohio, has just announced a new Man Overboard Floating Lantern as shown in the illustration

The floating lantern consists essentially of a steel tube expanded at the center to provide proper buoyancy. The tube itself is designed to hold four Navy Type C dry cells. On board ship the lantern is mounted in an inverted position so that when it is thrown overboard along with a life buoy, it automatically rights itself on contact with the water. A mercury



Men Overboard Floating Lastern

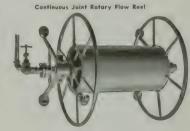
switch closes the circuit and the lamp is turned on, showing the location of the buoy. The batteries supply a continuous source of light for a period of not less than 22 hours.

Brooks Offers New Line

The Brooks Equipment Corporation of California now has available and is supplying many West Coast shippards with a complete line of standard approved fire protection equipment, according to Charles E Neal, general manager

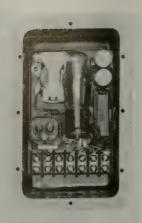
With the recent opening of a branch office in Portland, the company now has offices in all principal West Coast shipbuilding centers, and its staff of sales engineers is cooperating with shipyard engineers and architects in providing fire-fighting and storage equipment to meet the specifications and construction details of all types of Navy and maritime ships

Apparatus supplied includes equipment for stowage of fire hose, wash deck and gasoline hose, hawser and wire rope reels, fire hose cabinets, hose reels and ladder trucks for yard protection.



JULY . 1943





Electronic Level Control

Photoswitch Incorporated, Cambridge, Massachusetts, announces a new series of electronic level controls designed particularly for hazardous location mounting. The equipment is supplied for use with conductive liquids of an explosive nature.

Two models are available for highand low-level control respectively. Each is furnished as a complete unit in a vapor-proof, cast-iron housing for direct tank installation. A oneinch nipple screws into the hub at the bottom of the control housing, and is screwed into a one-inch flange on top of the tank. From the control, a probe rod projects through the nipple and into the tank to the desired depth. The probe is supplied as standard in one-half-inch-diameter brass. Other metals are available if required.

High-level control is accomplished when liquid rises and contacts the probe tip; low-level control, when liquid drops below the probe tip. Both models incorporate a safety feature providing for operation of the relay in case of current or tube failure.

The relay connections of Types P15NHX and P15NLX are those of a single-pole, double-throw switch. The relay contacts are rated at 1000 watts ac and may govern in the output almost any electrical equipment from signal lights to pump motors.

Of particular interest is the use to control the level of any conductive liquid such as writer or acids, in tanks of gardine oil, it similar non-conductive materials. In this application, the control remains in parative while the probe is impured in the non-

conductor, but when the conductive liquid rises to the probe tip, the relay operates. This application is especially pertinent to the petroleum and chemical industries, where it is frequently necessary to provide a safeguard against too much condensation accumulating at the bottom of a tank, or to indicate when a conductive liquid rises to a definite point.

New Bilge and Fire Unit

Extreme versatility in meeting some of the many hazards faced by cargo and combat ships in wartime is claimed for a new pumping unit announced recently by the F. E. Myers & Bro. Co., Ashland, Ohio.

This new unit answers the problem of auxiliary marine fire protection, emergency bilge service and other services requiring a light weight, portable, fast priming, high pressure and high capacity pump.

Operating independently of power plants or generators, its air cooled engine drives a Myers centrifugal pump which delivers 60 gpm at 95 psi or 200 gpm at 20 psi.

Priming is accomplished by use of an exhaust primer, and the pump gets water on fire in a few seconds.

For fire fighting, a Siamese valve is available for use of two 1½" hose lines. For bilge service, a special adapter is available for 2½" discharge hose. It can be had with foam proportioner for handling chemicals.

Pump and engine are completely protected by frame, making it possible for the unit to roll over without damage. Extremely portable, it can easily be carried by two men or

wheeled by one man, and has folding handles to permit storage in small space.

Synthetic Sponge

Research men of the B. F. Goodrich Company have developed a synthetic rubber sponge which will stay soft and compressible at 40 degrees Fahrenheit below zero (*40° F.).

Of medium density, the new sponge, satisfactory for many wartime as well as peace-time uses. is made in black color and can be furnished in slabs or molded shapes.

Company technicians say that, while the task of fabricating ordinary rubber and synthetic non-sponge compounds which will remain flexible at 40 degrees below zero is comparatively simple, it was difficult to develop a sponge compound which would be readily compressible at low temperatures.

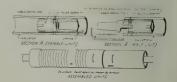
Cable Connector

A new cable connector that locks tightly, quickly unlocks and is fully insulated, has recently been developed for arc welding.

The female section is soldered to the cable lead, and the male section to the cable extension. Removable insulators are securely held in position with Allen screws. Connection is made by inserting the male section into the female section. Thus, with a twist, the locking spring rides the cam into position, holding both sections tightly. To unlock, simply twist apart.

This connector, known as the "Quik-Trik," is manufactured by Jackson Products, Detroit, Michigan.

The female section, when installed on a cable lead, may also be used as a holder handle and connected directly to the "Stinger" end of a Jackson Model TA holder. This adaptation saves time and material, eliminates the danger of live cable ends, and makes possible the economies of standardization.



The Edgar Allen For on her sea trials



Welded Ship Comes Through

Oregon Shipbuilding Corporation and its thousands of employees are justly proud of the following wire recently received from Washington, D. C.:

To the Workers of Oregon Shipbuilding Corp. — Production Communique No. 3. The Edgar Allan Poe ship you built has done magnificent service. Struck by an enemy torpedo amidship, its crew stood by their guns and continued to blaze away at the Jap submarine until it was sunk. The entire engine room of your ship was damaged, steam and fuel pipes ruptured, lower decks lifted and great damage done throughout the midship structures. But the bulkheads held. No water reached any cargo space. The vessel was later towed to port with its entire cargo intact. Two seamen gave their lives so that your ship with its vital war materiel would reach our fighting forces in the South Pacific. The performance of the Edgar Allen Poe is a credit to every worker of the Oregon Shipbuilding Corporation, and I know you will take pride in its accomplishment.

E. S. Land, Chairman United States Maritime Commission." Views of the ship while she was under construction.

(All photos courtesy of The Lin oln Flectra Company)







Brilliant Setting and Program Mark Launching of Belair No. 1

Staged in a perfect setting of lights and gay color before an audience of 6500 people in a great open air the ater, the first of 26 reinforced concrete barges was launched at Belair Shipyard, San Francisco Bay, at high tide on Wednesday night, June 16.

It was not a spectacular slide and a splash, with a high pitch of momentary excitement. Rather it was the slow, silent, dignified glide of a great ship, moving out into the water to go to work for its country—an impressive symbol of purpose and resolute determination.

Responding to the cry for more and more ships, the United States Maritime Commission added concrete On the Ways - SHIPS IN THE MAKING

barges to their construction schedule in order to increase tonnage capacity without using the steel plate needed for other types of wartime vessels.

Contract for 26 of these interesting vessels was awarded to Barrett

The hull of Belair No. 1, shown soon after forms were removed and before final dressing and surfacing of concrete.

and Hilp, general contractors, of San Francisco, who started work immediately converting 70 acres of useless mud flats into a modern shipyard.

After the grading had been completed, buildings were erected and seven 400-foot basins or graving docks were excavated along the waterfront. Six of these are for actual construction. The seventh is a painting and finishing dock. There is also a large pier to be used for out-fitting.

All facilities were designed for speed and economy of production so that the finished yard resembled a huge factory, with all the features of assembly line efficiency.

Outside forms for the hull were constructed in the six concreting docks. Floating gates held the bay water out of the basins until time for the launching. Inside forms for the bulkheads, ribs, deck and other details were constructed from templates designed in the mold loft. Much of the steel reinforcing was prefabricated in large sections out in the yard and moved to the hulls at the proper time.

Concrete was placed in three pours, the first filling the bottoms and bilges to a height of 8.1 feet. The second carried the hull and bulkheads up to a level just below the deck, and the third completed the deck, rails and deck girders. Each pour required 800 cubic yards of concrete and was a continuous operation.

Development of Haydite, a lightweight but strong aggregate, was the greatest improvement in the field of concrete ships in that it would produce a wall six inches thick with adequate strength and density for shipbuilding. This contrasts with the foot-thick hulls of old ships made from heavy aggregates such as stone and gravel.

At the launching there was a definite human interest note in the fact that the sponsor was Mrs. Henry Hilp, 83, mother of Harry Hilp, one of the principals of the contracting firm. Mrs. Frank Barrett, wife of the other partner, was matron of honor.

Speakers included Rear Admiral W. L. Freidell, commandant of Mare Island Navy Yard, speaking for the Navy; Major General Paul Bernard Malone, U. S. A. (Ret.) for the Army; and Joseph T. Wilson for the Maritime Commission.

A section of the crowd assembled to witness the launching.



Pacific Coast Deliveries

Pacific Coast shipyards delivered 84 merchant ships to the U. S. Maritime Commission during May, it was announced by C. W. Flesher, regional director, U. S. M. C.

Of the total of 813,100 tons, California Shipbuilding Corporation delivered 18 Liberty ships, aggregating 189,000 tons.

If the Western yards maintain their present pace, Mr. Flesher said, another world's record for ship production will be hung up for the year.

200th Liberty Ship

"Take her away, Captain! She is all yours"

This terse order megaphoned from the speaker's stand to the bridge of the S-S-Billy Mitchell by A-O-Pegg, manager of Calship's outfitting docks, climated brief but colorful ceremonies marking the delivery of the 200th 10,500 ton Liberty ship to the U-S-Maritime Commission by the California Shipbuilding Corporation

As the S. S. Billy Mitchell backed away from the outfitting dock, a crew of seven Calship girls, representing the 42,000 workmen, cast off hawsers in the form of red, white and blue bunting extending from the ship's bow to the speaker's stand Each of the girls selected for this job has a husband overseas in Uncle Sam's fighting forces.

The S. S. Billy Mitchell was launched on June 2 after 22 days on the ways. The delivery ceremonies took place during the noon hour so that day-shift workers could participate without interrupting production. Workmen presented a plaque to the ship's skipper. They also heard themselves praised by the corporation's officials for the "win the war" spirit which has prevailed throughout the yard during the construction of 200 Liberty ships since the John C. Fremont was launched in September, 1941.

Speakers on the program were A. O. Pegg, manager of the outfitting docks; J. M. Warfield, administrative manager; and J. S. Sides, manager of the hull and yard department.

Naval Launchings

Current launching of naval vessels in the Twelfth Naval District are as follows:

(U. S. S. Lindenwald, a naval auxiliary built by Moore Drydock Co., Oakland, California, was launched on June 11. The sponsor was Mrs. Wilber M. Lockhart, wife of Capt. Wilber Lockhart, USN, formerly Twelfth Naval District Aerological Officer, now on duty at sea.

U. S. S. Sarsi, a fleet tug, built by United Engineering Co., Alameda, Calif., was launched on June 12. Mrs. Robert E. Christy, wife of president of United Engineering Co., was sponsor.

Here goes Colship's Hull 200, the 5.5 Billy Mischell During the neon hour on June 16, the ship was delivered to the U. 5. Marilime Commission as management and workers joined in saying "goodbye" to this fine ship



Western Yards Deliver 83 Ships During May

Eighty-three new ships were delivered into service from Western shipyards during May, it has been announced by the Maritime Commission.

Of the 83 ships delivered, 57 were EC-2s; six were coastal cargo; six were special types; five were C-1s; four were tankers; three were C-3s; one was a C-2; and one was a concrete barge.

All American shipyards delivered into service 175 new ships totaling approximately 1,782,000 deadweight

tons. This brings the total number of vessels constructed thus far in 1943 to 711, totaling 7,142,122 dead weight tons only 35 ships less than the total production for the entire year of 1942, when 746 vessels were delivered.

Of the 175 ships delivered in May, 120 were EC-2s; 12 were C-type cargo; 12 were coastal cargo; 12 were Commission tankers; three were private tankers; one was a coastal tanker; six were special types; four were sea going tugs; one was a concrete barge; and four were ore carriers.

The complete list of Western yards and their deliveries follows:

SHIPYARD	o, of Vessels	Type of Vessel
California Shipbuilding Corp.	18	EC 2 Cargo
Wilmington, California		
Concrete Ship Constructors	1	Concrete Barge
National City, California		
Consolidated Steel Corporation, Ltd	5	C-1 Cargo
Wilmington, California		
Kaiser Company, Inc., Swan Island	4	Tankers
Portland, Oregon		
Moore Dry Dock Company	1	C-2 Cargo
Oakland, California		
Oregon Shipbuilding Corporation	17	EC 2 Cargo
Portland, Oregon		
Pacific Bridge Company	6	Coastal Cargo
San Francisco, California		
Permanente Metals Corporation	7 ·	EC 2 Cargo
(Richmond Shipyard No. 1), Richmond, Cal	lif.	
Permanente Metals Corporation	15	EC 2 Cargo
(Richmond Shipyard No. 2), Richmond, Cal		
Kaiser Company, Inc.	6	Special Type
(Richmond Shipyard No. 3A), Richmond, Cal	lif.	
Western Pipe & Steel Company	3	C-3 Cargo
San Francisco, California		



The Mascoma, Marinship's fourth tanker, ready to leave the way— decorated in this novel fashion in honor of Memorial Day.

(Photo courtesy Marinship)

Memorial Day Launching Ceremony

Marinship chose a very fitting and stirring day for the launching of its fourth tanker—the S. S. Mascoma. On this occasion Memorial Dayin even greater need for the fulfil-ment of their obligation to Uncle Sam's fighting men was brought home to the throng of workers as they watched the huge tanker, destined to carry oil to the Allies, slide into Richardson Bay. The entire ceremony was keyed to the day, with the birth of a new ship and the honoring of the nation's hero dead jointly underlying the program.

U. S. S. Ogden Launched

Bearing the name of one of the West's most colorful cities, whose history dates back to the days of the trappers, the U.S.S. Ogden, frigate built for the United States Maritime Commission and the United States Navy, was launched on June 23 at three-thirty from Consolidated Steel Corporation's Wilmington shipyard.

Representing Ogden as sponsor of the ship was Miss Margaret S. Shelton, employee of the Naval Supply Depot at Clearfield, Utah, and Queen of Ogden's Pioneer Days Rodeo, who was selected by the mayor and the city commission of Ogden for this honor Mrs. Roland B. Ballantyne

served as matron of honor. Alden G. Roach, president of Consolidated Steel Corporation, acted as muster of ceremonies at the brief but "hiprossive ceremonies

Simultaneous with the christening

of the Ogden, sixth frigate launched from the yard since May 5, the company's outstanding production record has been revealed in a report just received from Admiral Howard L. Vickery, United States Maritime Commission, Washington.

As of June 1, the report d'scloses, Consolidated's Wilmington shipbuilding division stood in first place both for number of launchings and for percentage of gain in production during the preceding month, out of the nine yards in the United States building frigates.

Designed primarily for convoy duty, the frigate is an escort vessel similar to the Canadian-British corvette but altered to meet the requirements of the United States Navy. The U. S. S. Ogden was one of eighteen contracted for by the Commission with Consolidated.

Great Record in Building **And Repairs**

The Todd Shipyards Corporation has built and repaired 6020 ships, totaling more than 24,000,000 tons, for the United States and the Allied nations since Pearl Harbor, it was revealed by John D. Reilly, president of the corporation, at the annual meeting of stockholders.

Of this number 5853 ships, having an aggregate tonnage of 22,649,485, were repaired in the five repair yards of the organization, and 167 ships-Libertys, destroyers, aircraft carriers, transports and secret boats-were built in the four construction yards.

We of Todd's feel that we are making a substantial contribution to the war effort," Mr. Reilly said. "However, there can be no let-down of effort in this most important work. I am happy to say that the spirit of teamwork, always a potent factor in Todd yards, has never been stronger than it is today.'

Speed Output of Rubber Barges" Needed by Navy

The vulcanization speed on inflatable rubber barges for tending U.S. Navy patrol planes has been stepped up "from a rate of one every three hours to one every 50 minutes" by the B. F. Goodrich company, said T. G. Graham, vice president.

He credited the increase to a new "live steam barge vulcanizer, the largest ever 'blown in' in Akron, the world's rubber capital," just put into operation by the company.

The rubber barges, looking somewhat like overgrown versions of the life rafts used by Captain Eddie Rickenbacker, are equipped with steel mountings for outboard motors. They are 25 feet long and 71/2 feet wide, and can be deflated and rolled into small storage space when not being used for seaplane maintenance.

Mr. Graham said the new vulcanizer responsible for reducing barge manufacturing time has an inside diameter of 10' 6", is 52 feet long and weighs 35 tons.

Its "bank vault" door alone weighs

10 tons.

The cameraman goes inside the new 42-foot barge vulcanizer to show how a Navy barge is swung into position on an overhead monorail, and then run inside the vulcanizer to be "cured" in 50 minutes instead of three hours, as heretofore. During the livesteam treatment, the interior temperature of the vulcanizer is boosted to 275 deg. and held there under pressure to give the rubber and fabric barges a 20minute cure.





Edited by Jerry Scanlon





Above: H. B. HANEY Below: GEORGE D. ZEH

Service Emblems Awarded

Four familiar figures in Bay area marine activities were recently honored with the award of service emblems by Tide Water Associated Oil Company.

H. B. "Bert" Haney, manager of the Transportation Department, passed his quarter-century milestone with the company, and was given a gold emblem set with a diamond.

Oldest of the group in point of service was G. D. Zeh, manager of the Marine Department, who cele-

first 17 - 4 th consistent with the company, and was presented with a gold with four diamonds.

Set as entities do went to J. G. Wefring, master and D. W. Billings, short or process of the S. S. Mickey Mr. Billings' pin displays three diamonds, symbols, at 35 years' connection, and Capt. Wefring wears on diamond for 25 years.

William H. Roth, president of Mat son Navigation Co., announced the promotion of three executives to the office of vice president.

Hugh Gallagher, operating manager: Sidney G. Walton, secretary; and G. K. Nichols, manager of the construction and repair shops, were the true elevated.

Mr. Gallagher is one of the best-known operators in the country. He came to Matson about fifteen years ago while general manager of the old Ocean Steamship Company. He is the present head of the Propeller Club of the United States for the Port of San Francisco and is a brother-in-law of Admiral John W. Greenslade, commandant of the Twelfth Naval District. He started his executive marine career with the old Pacific Coast Steamship Company.

Mr. Walton has made an enviable record in the steamship passenger husiness, being head of this branch of the concern's activities, in addition to secretary, since the passing of John Ryan as passenger traffic manager.

Mr. Nichols is better known among the engineering ranks of steamship men. Under his direction the company was recently awarded the "M" award for outstanding production, by the U. S. Maritime Commission. He supervised the building of the luxury liners Monterey, Lurline and Mariposa.



W. E. SYKES

W. E. Sykes

Word has been received of the death in England on June 19 of Willham F. Sykes, famous authority in gears and inventor of the Sykes continuous tooth herringbone gear and the Sykes gear generating machine. He was formerly associated with Farrel Birmingham Company at its But fado plant, but for the past six years has been in England operating his own plants, W. E. Sykes, Ltd.

In 1923 he joined Farrel Birming ham Company, who acquired the American rights to the Sykes process of gear generation. At the company's Buffalo plant his entire efforts were devoted to the development of the Sykes gear machine and promoting the use of the machine and the Sykes continuous tooth herringbone gear.

As an inventor Mr. Sykes was notably successful. Over one hundred patents were issued to him. His discoveries in kinematics aroused con siderable interest in the scientific world. His original one-tooth pinion model has received world-wide atten tion. He was the author of numerous technical papers which were presented before many engineering societies and widely published. In 1934 he was awarded the Edward Longstreth Medal by the Franklin Institute of the State of Pennsylvania, in recog nition of the development of the Sykes gear generator, the concurrent development of the Sykes process of gear generation and the Sykes continother work of scientific value in the field of gear design, manufacture and application.



Marinship was honored by the visit of Rear Admiral G. W. Stoeve, Royal Netherlands Navy, member of the Allied Chiefs of Staff at Washington, D. C., and other Netherlands Naval officers recently. Right to left: Rear Admiral Stoeve; John Anderton, assistant to production manager in charge of Plant Division: Lt. Comdr. G. Koudijis, aide to the admiral; Comdr. A. S. Faber, Chief Engineer of the Soerabaya Naval Base; and Lt. John Prins, U.S.N.R., liaison officer for the party.

The Merchant Marine Distinguished Service Medal has been awarded Frederick James Mills, chief engineer of a Liberty ship, by the Maritime Commission. The citation was in recognition of his courageous action in repairing a damaged lifeboat after his ship was torpedoed, making it possible for himself and 60 companions to arrive safely at a South American port.

The name of John H. Rossetter was given a Liberty ship recently launched at the Richmond shipyards. The late Mr. Rossetter is remembered best as chairman of the United States Shipping Board in World War I, and was the outstanding Westerner selected during the conflict to direct shipping activities. He was also one-time vice president of W. R. Grace & Co., and also of the old Pacific Mail, and president of Sperry Flour Company. He is credited with having established the first United States flag around-the-world steamship service.

His widow, a member of the Labor Relations agency of the Government, recently became the bride of George Creel, noted writer.

Captain Gustaf Johnson of Alameda, widely-known tanker skipper, was the hero of his ship when the tanker was torpedoed by a Jap submarine in Pacific waters on May 18, the Office of War Information revealed, withholding the name of the vessel.

Captain Johnson, remaining cool, directed his officers and crew to lifeboats in the blackness, and then gave orders to keep out of the Nipponese undersea craft's fire as she threw five-inch shells and heavy machine gun missiles into the bow of the wallowing tanker until she sank. The Japs paid no attention to the occupants in the lifeboats. The ship's bulkheads were blown in by the torpedo.

Captain Johnson's report announced two members of the engine room killed and four others injured. The dead were Chief Engineer Paul E. Harrison of Los Angeles and Oiler Harold M. Whalman of Santa Cruz. George Pirie, radioman, of Oakland, also was acclaimed a hero by the captain for his coolness in sending out S.O.S. calls while the vessel was sinking.

Because of the supply of tung oil growing acute, the WFA has announced as of July 1 discontinuance of this oil as a base for cargo ship paints. Treated linseed oil will be used as a substitute.

We seldom pay much attention to politics, but the announcement that Roger D. Lapham had resigned as chairman of the War Labor Board and was prepared to take the same action as chairman of the American-Hawaiian Steamship Company, in order to become a candidate for mayor of San Francisco, certainly found hearty response among all who know Mr. Lapham.

Kurt Steindorff is the new Pacific Coast manager of the General Electric Company's resale Industrial Division, Raymond M. Alvord, commercial vice president, announced. He has been with the company for 29 years.

Commodore Charles A. Berndtson, one of the best known of the Matson skippers, who has been on the bridge of all their large liners, has the distinction of being first ship's officer in this area to be inducted into the U. S. Maritime Service with the high rating of captain. His last command was on the S. S. Lurline.

Captain Axel G. H. Johnson, who had engaged for the last decade in marine surveying, died at the age of 61 on June 11, after a month's illness, in the Marine Hospital in San Francisco.

At the time of his death, he was with the U. S. Transport Service. He had been a resident of Long Beach for many years.

Out of the war from time to time come reports of many unusual experiences at sea. Recently the War Shipping Administration received the report that a cargo ship had been torpedoed in the West Indies area. The crew abandoned the vessel and took to the lifeboats. They left in such a hurry that there was no time to shut off the diesel engines. Forty hours later, discovering the ship still afloat, the crew returned, bringing the vessel to port under her own power.

Within a short time lifeboats and life rafts will be equipped with a small container that will eliminate one of the sea hazards confronting sailors since the beginning of navigation — lack of drinking water. Through the scientific discoveries of two Navy medical officers, lifeboats and rafts are to be equipped with a few plastic bags and a small amount of black and white chemicals in boxes the size of a package of cigarettes.

With this equipment it will be possible to supply lifeboats and rafts with enough of the chemicals to provide clear, sweet, potable water from sea water up to a pint per day per man for 20 days.

The way the procedure works is this:

A little more than a quarter of sea water is scooped into one of the plastic bags, into which is then added one of the chemical compounds. This precipitates several of the dangerous and objectionable substances in the water. This is then poured into an other bag, which contains a filter sack. The product is then saltless but still alkaline. At the bottom of the second bag is the second chemical. After the chemical has been diffused through the mixture by kneading and agitation, the water is poured into a third bag containing a filter. The result-precious drinking water.

The chemicals precipitated out of the sea water include sodium chloride and magnesium chloride. One-third of one per cent of the salt is left in solution, however, to replace salt lost from the body.

Seamen of the world, because the American Government is making this formula available to all United Nations, will be indebted to a young California Navy lieutenant for the life-saving water. He is Lieutenant (j.g.) Claire R. Spealman of Auburn, Calif., former assistant professor of physiology at Virginia Medical College, Richmond, Virginia.

The often-discussed and agitated plan for a second Annapolis for the West Coast may be closer to fulfillment than many are aware, judging by the moves in Congress by two solons of the Pacific Coast.

Senator Homer T. Bone of Washington has introduced a bill for the establishment of an additional academy to be located on Puget Sound.

Similar legislation for both a naval and a military academy has been introduced by Senator Charles L. Mc-Nary of Oregon. Both institutions would be modeled after Annapolis and West Point.

H. G. Tallerday, chairman of the board of Western Pipe and Steel Company of California, announces that Reese Tucker has been named secretary and treasurer. Mr. Tucker, formerly controller, succeeded W. G. Aldenhagen, who is retiring from active service after more than 25 years

with the company. However, he will remain a member of the directorate

The British Ministry of War Transport states that an average of 13 out of every 100 men of the crows of British merchant vessels are lost through enour actor. Loss of life in lifebouts and in ratts is even loss, averaging do nt 2 per out. The report said that or aponts in lifebouts are usually picked up within 24 hours.

Accident Frequency

Recording a decrease of 5.41 below the national average of 37.91 for 1942, a survey of shipyards holding Maritime Commission contracts reveals an average accident frequency rate of 32.5 for the first quarter of this year. The rate had declined from 34.1 in January to 31.4 in March

This survey was made in connection with the "Minimum Requirements for Safety and Industrial Health" program sponsored by the Commission and the Navy Department.

The accident frequency rate used is the number of lost-time injuries per 500 men per year. Considerably improved safety conditions in ship-yards can be attained through better cooperation between management and labor in the nation-wide program of safety and health aimed at eliminating many of the hazards currently existent.

Seven yards working on the Maritime Commission ship program reported frequency rates of less than 20. These were: Nearly a fourth of all the shipward minutes reported for January and February were eye cases. Only a few of these were sufficiently serious to result in permanent impairment of sight, but in the aggregate they resulted in a great deal of lost time and physical discomfort.

Eye flash from welding operations accounted for 44 per cent of all disabling eye cases. The term eye flash is used to describe the painful injury to the eye resulting from exposure to the welding arc. As in the case of skin sunburn, the ultra violet rays, and not the light or glare of the arc. burn the delicate tissues of the eve. The victim is seldom aware of the injury until some hours after exposure. The rays do not penetrate the lens of the eye or permanently injure its deeper structure, and the use of proper protective equipment issued to all shipyard workers prevents injury and consequent lost time from the job. The fact that 48 per cent of the flashes reported by yards in the North Atlantic area were experienced by workers other than welders, particularly shipfitters, emphasizes the importance of consistent use of eve protection by all shipyard workers.

Yard Frequ	Frequency Rate	
American Ship Building Co., Cleveland, O.	11.6	
Richmond Shipbuilding Corp., Richmond, Calif. (No. 3)	13.2	
Walter Butler Shipbuilders, Inc., Superior, Wis	14.6	
Pennsylvania Shipyards, Inc., Beaumont, Texas	16.7	
Pusey and Jones Corp., Wilmington, Del	18.1	
J. A. Jones Construction Co., Inc., Brunswick, Ga	18.4	
Alabama Dry Dock & Shipbuilding Co., Mobile, Ala	18.8	

Other Maritime Commission yards with accident frequency rate below the national average for 1942 were:

Barnes-Duluth Shipbuilding Co., Duluth, Minn. Bethlehem-Alameda Shipyard, Inc., Alameda, Calif. Consolidated Steel Corp., Ltd., Wilmington, Calif. Globe Shipbuilding Company, Superior, Wisconsin Gulf Shipbuilding Corp., Mobile, Ala.
J. A. Jones Construction Co., Inc., Panama City, Fla. Marinship Corporation, Sausalito, Calif. McClosky & Company, Tampa, Fla.
Moore Dry Dock Company, Oakland, Calif. New England Shipbuilding Corp., South Portland, Me. Richmond Shipyard No. 1, Richmond, Calif. Richmond Shipyard No. 4, Richmond, Calif. St. Johns River Shipbuilding Co., Jacksonville, Fla. Leathem D. Smith Shipbuilding Co., Sturgeon Bay, Wis. Sun Shipbuilding and Dry Dock Co., Chester, Pa.

MARINE DEPARTMENT A E T N A I N S U R A N C E C O. Q U E E N I N S U R A N C E C O. MARITIME INSURANCE CO., LITD. FIDELITY PHENIX FIRE INS. CO. Commercial Hull Dept. A U T O M O B I L E I N S. C O.

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Your Problems Answered

(Continued from page 93)

should be tightened when necessary. In case of failure of the water supply to the coolers, the machine can be operated as an open-type machine by removing the cooler duct plates to admit air to the machine inlets. If the inlet air temperature under these conditions exceeds 40 C. (104 F.) the load must be reduced in inverse proportion to the increase in temperature. For example, if the ambient temperature increases from 40 C. to 50 C., the load must be reduced to four-fifths of normal.

In each cooler there is an air relief cock at the top of the rear water-inlet box. Whenever the cooler has been drained of water, and when starting up again, this relief cock should be opened temporarily to facilitate the escape of trapped air. It is also good practice to open these cocks momentarily during long periods of operation in order to relieve air that might become entrained in the circulating water.

Double-Tube Cooler, for Generator

The generator cooler requires a flow of 110 gpm of water at an inlet temperature not exceeding 85 F. in order to deliver air at a temperature not exceeding 40 C. (104 F.), when operating at normal full load.

The ends of the inner tubes are expanded into the outer tube sheets. The ends of the outer tubes are expanded into the inner tube sheets. The inside surface of the outer tube carries slots which run the length of the tube: failure of the inner tube allows water to run along these slots to the space between the two tube sheets, and such leakage may be deteeted by water coming from the leak-off drain at the side of the gencrator. It is possible that leakage to this drain can take place as the result of the fit loosening between the inner tube and its tube sheet; therefore these tube ends should be resexpanded before deciding that the leak is elsewhere.

Single-Tube Cooler, for Motor

The motor cooler requires a flow of 350 gpm of water at an inlet temperature not exceeding 85 F. in order to deliver air at a temperature not exceeding 40 C. (104 F.), when operating at normal full load. At maximum load of 6600 hp, the cooler requires a flow of 400 gpm.

In the single-tube cooler, the tubes are expanded into the tube sheets. Any individual tube may be removed by punching it out through the hole occupied by the bell end with a shouldered drift pin applied at the small end of the tube. A spare tube can then be inserted and its ends expanded into the tube sheets until a watertight joint is obtained.

This concludes the information on the main propulsion. The next series will cover the auxiliary turbine generator sets for the electric drive tanker.

A Powered Model of A Liberty Steamer

After 16 months, a 9-foot model of the Billy Mitchell, Calship's 200th Liberty ship, has just been completed under the direction of T. B. Chandler, Superintendent of the Production Improvement Department of the California Shipbuilding Corporation.

Built exactly to scale at the rate of 1/4" to a foot, the all-steel ship model, under radio control, will make two knots. Powered by a 6-volt motor and 2 batteries, the miniature Calship weighs 250 pounds and draws 63/4", equivalent to 24' 9".

Its remote control not only operates the ship in forward and reverse but also regulates the steering.

About 88 students enrolled in the National Defense Shipfitting class of Fullerton Junior College spent a total of 15 thousand man-hours putting together the more than 6000 pieces which comprise the model.

Plans for launching the model in the near future are now being made.

Group Insurance for Shipyard Workers

Employees of seven San Francisco Bay shipyards are qualified to participate in a group life insurance plan which the Maritime Commission is prepared to approve in Washington, according to the local Maritime Commission office.

This plan is to be known as the Maritime Commission Standard Plan of Contributory Group Insurance, and will be applicable to all shipyards working 100 per cent on Maritime Commission contracts. Among those eligible to qualify are the following shipyards: Marinship, Sausalito; Moore Dry Dock Co. Yard I, Oakland; Pacific Bridge Yard I, Alameda; Bethlehem Shipyards, Inc., Alameda; and Richmond Shipyards I, 2 and 3.

Under the plan, workers earning less than \$1.25 an hour may obtain life insurance coverage of \$1,000, and those earning in excess of \$1.25 per hour may obtain coverage of \$2,000, as well as health and accident benefits.

The Commission's Division of Insurance has notified all ship-yards operating 100 per cent on Maritime Commission contracts that the Commission is now prepared to approve the Standard Plan, in which half of the employer's cost and a proper administration expense are made reimbursable items.

The expansion of our shipbuilding program has in many instances caused the transfer of key men from their parent companies to shipyards, thus causing them to risk losing their group life insurance. Many of the newly established yards do not have a program for such insurance, although contributory insurance has been in effect with most of the large employers for many years.

Lunning

Who When Where

McCormick Line Honored by San Francisco Propellers



The June meeting of the Propeller Club of the United States, Port of San Francisco, was noteworthy.

McCormick Steamship Company was honored, in line with the Club's practice of saluting major memberorganizations, and Junior Past President Charles L. Wheeler, who is executive vice president of McCormick, introduced a goodly company of his fellow-workers, including John Clerico, Joe Lunny, George Bushnell, Lt. John Stein, Harry Strittmatter, George Elwood, and other San Fran-

cisco officials, with a few Los Angeles men aboard for good measure.

Guest speaker of the day, presented to the Propeller audience by President Hugh Gallagher, was General David Barrows, who wove a most interesting talk around the vital importance of ships—and the part our merchant marine operators are assuming in the world struggle.

At the speakers' table, as pictured in our half tone, were members of the Congressional Marine Committee, who came to San Francisco during June for a look-see at our amazing shipyards.

Changes Post

Everett R. Johnson, formerly in charge of United States Maritime Commission design of deck machinery, is now associated with Sedgwick Machine Works as supervising engineer and head of the company's Deck Machinery Department in its Marine Division, 80 Eighth Avenue, New York.



Page 109

San Francisco Marine Exchange





Upper left: Roy C. Ward, president; executive vice president, Cosgrove & Company. Upper right, J. T. Greany, treasurer; manager, Marine Sales, Bethlehem Steel Co. Lower left: M. A. Gremer, secretary.

The San Francisco Bay Area boasts today one of the nation's outstanding maritime associations—its Marine Exchange.

Wartime activities have brought an increase in membership and enhanced prestige. Among its members are the shipyards; manufacturers of the machinery, equipment and material used to build and repair ships; the steamship companies; marine underwriters; the Sailors' Union; the port authorities; and many others, including banks, exporters and importers, who are indirectly, as well as directly, interested in the maintenance and growth of the maritime industry.

Before Pearl Harbor, when normal activities were still possible, the Marine Exchange was the Pacific Coast's representative in Washington, D. C., in shipping matters involving Federal regulations and legislation. Today it is a wartime maritime coordinating agency with private telephone lines to Government agencies in control of the Bay's shipping and with active committees engaged in furthering the war effort.

The Marine Exchange is more than a coordinating agency. For want of a better term, it is the spark plug that initiates new ideas designed to further the development of Pacific Coast shipping, that arouses the needed enthusiasm and that finds the means of carrying out the plans adopted.









Vice Presidents Directors









- (1) Capt. A. G. Townsend, marine manager, Matson Navigation Co.
- (2) Allan K. Hulme, vice president, General Steamship Corp., Ltd.
- (3) E. J. Macfarlan, assistant manager, Foreign Department, Standard Oil Company of California.
- (4) Leo P. Bailey, manager, Steamship Department, Balfour-Guthrie & Co., Ltd.
- (5) A. B. Johnson, Jr., manager, A. B. Johnson Lumber Co.

 (6) Joseph F. Marias, past chairman, Board of State Harbor Commissioners.
- (7) W. F. Minehan, assistant vice president, Bank of America; past president, Foreign Trade Association.
- (8) H. H. Pierson, Pacific Coast manager, De La Rama Steamship Company, Inc.

Lewis A. Lapham, Civilian Aide to General Frederick Gilbreath, is not shown in this group.









Here are the splendidly-appointed offices of the Cleveland Diesel Engine Division, General Motors Corporation, newly located in San Francisco's 111 Sutter Street Building. T. L. Meckbach, who came out to inaugurate things, is shown at the left. Ted has since returned to his Eastern quarters, in and around New York. New manager at San Francisco is L. J. Krumm. In the center view is Charles C. Cheevers, service manager of the organization.

The Japanese are holding William H. Gates, veteran chief engineer and pioneer resident of Seattle, prisoner in Japan's Santa Tomas internment camp in Manila. He has been a captive ever since December, 1941, his wife was advised. The report said that he was in good health.

Mr. Gates is well known in Pacific shipping. He was serving with the American Mail Line when taken prisoner. Seventy-two years of age, his fate was unknown until the radio revealed his predicament.

George J. McCarthy and Don Tinling, former Seattle shipping men, are confined to a Jap prison camp in Manila, according to a short-wave broadcast picked up by R. E. Borchgrevink, well known in Palcific Coast marine circles. Mr. Borchgrevink, onetime sub-manager in San Francisco and Seattle for W. R. Grace & Co., now vice president of C. Gardner Johnson in Vancouver, intercepted the information and notified the families of both.

Interned in the same camp is Oscar G. Steen, vice president in charge of traffic for the American President Lines, who had made his headquarters in Shanghai.

Mr. McCarthy was Oriental passenger manager and Mr. Tinling Oriental traffic manager for the APL. The latter is a brother of Robert A. Tinling, Seattle, manager for Dodwell & Co. His wife and three children are now in Glendale, Calif. Eric Airriess, of the passenger department of the APL, Shanghai, is also a Manila prisoner.

Roy H. Johnson, formerly chief officer on the Pierre S. Dupont, has been named skipper of the new Liberty ship Wilfred Grenfell, a Calship product.

John Moore, formerly chief engineer on the Pierre La Clade, is head of the engine room; Roy A. Tuttle is the first assistant; and John Fidyk is third assistant. Clarence H. Arveson is second officer.

Lawrence A. Griffin is the new second assistant on the James B. Grancis, and Alfred R. Fife is the third assistant. John E. Ingram is second officer, having been appointed while the vessel was in a Pacific port.

The death of Thomas (Tom) Mc-Mullen, technical director for Western Pipe and Steel Co., on May 23, was learned with regret by his friends afloat and ashore, for he was as well known as a seagoing chief engineer as he was among executives and workers in Pacific Coast shipvards.

He was a veteran chief engineer, and during the first world war served aboard troopships crossing the Atlantic. He came to Western Pipe & Steel when the first C-1's were to be constructed, and he also played a commanding position in the C-3 construction program.

Belated news of the death of

Charles Barthold, vice president of the Barber Steamship Line in New York, in May, was received here by P. S. Newcomb, Pacific Coast manager. The deceased was well known in West Coast shipping.

George Richards, formerly in the Seattle offices, is now looking after Dodwell & Company's Los Angeles activities, while John D. Richards, on leave, is in the Navy.

The passing of John Wynn, 53, formerly secretary-treasurer of the Associated Banning Company, left a gap in the ranks of able marine executives. He is survived by his widow, Mary F. Wynn; daughter, Murial A. Wynn, and two brothers, Herbert P. and Watkins W. Wynn.

Todd Shipyards Corp., for the year ending March 31, 1933, reported a net income of \$3,680,691 after taxes were deducted. This compares with \$4,442,965 for the preceding fiscal year of the corporation, and is equivalent to \$17.95 per share.

Grace Line this year celebrates the fiftieth anniversary of the establishment of its regularly-scheduled steamship service between New York and the West Coast of South America. The company at the same time also marks the fiftieth anniversary of its first large fleet of specially-constructed steamships, which replaced the sailing ships used on that route in the first decade of its history.

COMING TO STAY ON THE WEST COAST

About June 15 the gangplank comes down as we open our Western Office in San Francisco at 417 Market St....Mr. E. Harold Biddison will direct our Western Marine Department, representing the interests of:



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COLVIN-SLOCUM BOATS, INC., Lifeboats, Rafts, Life Jackets, Life Preserver Lights.

LAKE SHORE ENGINEERING CO., Electric Cargo Winches.

ULSTER FOUNDRY CORPORATION, Hand-Power Deck Machinery, Bitts, Cleats, Chocks, and Fittings.

CATSKILL METAL WORKS, INC., Cable Reels, Sheet Metal, Machine Products, Iron, Brass, Aluminum Castings.

For data and prices on the West Coast, write Mr. Biddison or telephone Exbrook 1048.

Carswell Marine Associates, Inc.

NEW YORK OFFICE: 15 Park Row, New York, N. Y. Telephone: BArclay 7-4170

WESTERN OFFICE: 417 Market St., San Francisco, Calif. Telephone: Exbrook 1048

ALL BRONZES . MONEL METAL . ALLOY IRONS



Lead-Base Bearing Tests

by T. E. Eagen

Savings of more than 99 per cent in the tin content of bearing babbitt, and the possibility of completely eliminating costly anchoring methods were two of the outstanding advantages recently disclosed in tests being made at The Cooper-Bessemer Corporation of Mt. Vernon, Ohio, and Grove City, Pa.

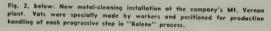
With a large proportion of the world's tin supply under enemy control, company officials believe they have found a most satisfactory alternate for commonly used bearing al-

LEAD-BASE BABBITT METAL
OF LOW TIN CONTENT

IRREGULAR CAVITIES AT
JUNCTION POINT INDICATE
AREAS WHERE GRAPHITE
PARTICLES WERE REMOVED
IN MOLTEN SALT BATH

BEARING BACKING
(MEEHANITE CASTING)

Fig. 1, above: Drawing taken from actual micro-photograph at Cooper-Bessemer laboratory showing greatly enlarged section of Mechanite backing and lead-base bearing metal. Low tin-content alloy flows into irregular cavities, thus providing a secure anchor for bearing metal.





loys of high tin content. This wil undoubtedly be suitable for all bear ings with the possible exception of those subjected to the most severe stresses.

A comparatively new metal cleaning method known as the "Kolene" process is credited largely for success in being able to use and satisfactorily anchor lead-base bearing babbitt.

This "Kolene" process is unique in that it provides an exceptionally firm and uniform bond between lead-base babbitt alloy and the Mechanite Metal from which Cooper-Bessemer bearing shells are cast.

The bearing shells are first dipped into a hot molten salt bath to remove the carbon (graphite) particles common in cast iron. By cleaning out these particles in the metal, a considerable amount of anchoring surface is added for bonding the babbitt, as indicated in Fig. 1.

After rinsing, the backings are placed in another salt bath to reduce surface oxidation resulting from the first bath

The backings are again rinsed and suspended for a few seconds in cold hydrochloric acid before they are dipped in a flux and placed in a low tin-content alloy, which forms a uniform coating on the bearing surface.

The bearing backings, so coated, are placed in proper jigs, and babbitt is poured against them, which readily forms the tight bond necessary to stand the pressure and stresses of big-engine operation.

The bonding is so uniform and firm that it has been possible to reduce the bearing thickness to a small fraction of that formerly required. This thin bearing alloy has stood up remarkably well under the most severe testing conditions.

This new development may eliminate machine grooving of the bearing backings—a time-consuming operation used to anchor the bearing metal to the castings. It also opens up new possibilities for cutting weight and saving Meehanite Metal by reducing wall thickness of the castings.

The installation for handling the "Kolene" process at Cooper-Bessemer's Mt. Vernon works is one of the largest of its kind in the country and is indicative of the constructive efforts being made at this war plant to meet today's critical material shortages despite accelerated production demands.

(The author is Chief Metallurgist, Cooper-Bessemer Corp.)

WALLACE Better Bends



WALLACE Full Automatic Hydraulic Machines are simple to operate, efficient and compact.

The ± 700 series Ram Type machine shown is best suited to control a wide range of work, where the number of any given radius is limited and where the original tool investment must be minimized. Available in 5 sizes for work up to 16" iron pipe or the equivalent in tubing or structural shapes.

Offset, kicks, returns, circles and many other type of bends can be readily made.

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Production Awards

The following companies recently have been given awards for high achievement in production:

Maritime Commission "M" Pen-

nant-

The Air Preheater Corporation, Wellsville, New York: Air Reduction Company, Inc., New York City; The Bevis Machine Company, Middletown, Ohio; General Cable Corporation, New York City; The Ingalls Iron Works Company, Inc. and Birmingham Tank Company, Birmingham, Alabama; Lynchburg Foundry Company, Lynchburg, Virginia; Martin-Parry Corporation, York, Pennsylvania; Pennsylvania Range Boiler Company, Philadelphia, Pennsylvania; Reading-Pratt & Cady Division, American Chain & Cable Company, Inc., Philadelphia, Pennsylvania; Leathem D. Smith Shipbuilding Company, Sturgeon Bay, Wisconsin; Todd-Galveston Dry Dock Company, Galveston, Texas; The

Union Metal Manufacturing Company, Canton, Ohio; Watkins, Inc., Wichita, Kansas; Westinghouse Electric & Manufacturing Company, Merchant Marine Division, Philadelphia, Pennsylvania.

Gold Star awards-

Enterprise Wheel & Car Corporation, Bristol, Tennessee - Virginia: Erie Forge Company, Erie, Pennsylvania: A. P. Green Fire Brick Company, Mexico, Missouri; Homestead Valve Manufacturing Company, Inc., Coraopolis, Pennsylvania; Isaacson Iron Works, Seattle, Washington; Linde Air Products Company, Inc., New York City; Minneapolis-Moline Power Implement Company, Minneapolis, Minnesota; Russell & Erwin Manufacturing Company, New Britain, Connecticut; Security Engineering Company, Inc., Whittier, California; Selby, Battersby & Company, Philadelphia, Pennsylvania; Western-Walker Company, Los Angeles, California; Whitin Machine Works, Whitinsville, Massachusetts; Wickwire Spencer Steel Company, New York City; Wilson-Snyder Manufac-turing Division, Oil Well Supply Company, Braddock, Pennsylvania.

Additional awards of various

types—

Bethlehem-Fairfield Shipyard, Inc., Baltimore, Maryland, Maritime Merit Eagle Pennant; California Shipbuilding Corporation, Wilmington, California, Maritime Merit Eagle Pennant; Delta Shipbuilding Company; Inc., New Orleans, Louisiana, fourth Gold Star; Houston Shipbuilding Corporation, Houston, Texas, fourth Gold Star; North Carolina Shipbuilding Company, Wilmington, North Carolina, seventh and eighth Gold Stars; Richmond Shipyard No. 1. Permanente Metals Corporation. Richmond, California, seventh eighth, and ninth Gold Stars; Richmond Shipyard No. 2, Richmond Shipbuilding Corporation, Richmond California, sixth and seventh Gold Stars.

American Locomotive Company Latrobe, Pennsylvania; Army-Navy "E" on May 25.

Sullivan Machinery Company Michigan City, Indiana; Army-Navy "E" on May 14.

Foster Wheeler Corporation, Car teret, New Jersey; Army-Navy "E' with two stars. The Dansville, New York works received two awards.

Bellingham Marine Railway and Boatbuilding Company, Bellingham Wash.; a renewal of the Navy "E' with two stars on May 15.



World's Greatest Shipyard

The California Shipbuilding Corporation at its varid in Terminal Island Lis Angeles, since September 27, 1941, had leunched 2,150,2000 deadweight tons with the launching on June 2 of the S. S. Billy Mitchell, its 20, th Liberty ship.

Such a fleet can carry as much cargo it one time as 262,500 heavy bombers. It would require about tour bours to walk past the 17 milestony would extend if in formation bow to stern, according to E. C. Mac Donald, Calship statistician.

It required 630,620 tons of steel to build them. They contain 6,000,000 teet, or 1136 miles, of piping enough for a pipeline from Los Angeles to Oklahoma City.

Manual welding totals 45,048,357 feet, or 8532 miles almost as far as from Los Angeles to Singapore, while 4,328,384 rivets were driven into the armada

Reflecting the constantly rising production tempo at the yard are these milestones in its amazing record:

Hall	Days on ways	Out	Total days
1	John C. Fremont 126	147	273
50	William F. Cody 42	20	62
100	Benjamin Ide Wheeler 30	20	50
150	Ansel Briggs 29	16	45
200	Billy Mitchell 22	12	34

Deliveries increased 21 per cent during the first quarter of this year over the last quarter of last year.

Another world's record was set in May by the yard when it became the first yard in the world ever to launch 20 Liberty ships in one month.

Not only did Calship launch a 10, 500-ton freighter every 37.2 hours during the month, but it delivered 18 completed ships to the U. S. Maritime Commission and laid keels for 20 more.

Climaxing the month's record production, the yard launched three Liberty ships during a 25-hour period.

Doubled Production

As an outstanding achievement in wartime industry, Permanente Metals Corporation, Shipyard No. 2 at Richmond, has more than doubled its rate of ship production within a year, Clay P. Bedford, general manager of the four Richmond yards, announced recently in greeting new members of the Anchormen's Society—the group with perfect attendance records.



Now Made in High Impact Strength MOLDED PLASTIC

... and for this job plastic is better than metal!

Tough and rugged. Shatterproof. Built for the kind of hard usage it will get aboard ocean-going vessels. Salt air or water does not deteriorate. Saves weight . . . saves metals for other vital needs. Easier to install. Less than half the weight of all-metal contact makers. Immediate deliveries with suitable priorities. "General Alarm," "Chemical Attack Alarm," and other circuit designations.

Write for Bulletin No. J-32 P.

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The scientific tests made on Emerson-Electric Marine Fans under extreme salt-atmosphere conditions prove their ability to withstand continuous war-time duty.

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LEADERS IN THE ELECTRICAL INDUSTRY SINCE 1890

Luminous Materials As Light Sources

Luminescent instrument panels which glow in the dark are enabling submarine crews-to navigate despite electric power failures caused by the explosion of depth bombs, Samuel G. Hibben, director of applied lighting for the Westinghouse Electric and Manufacturing Company. Bloomneld, X. L. told the Royal Canadian Institute at a meeting in Toronto recently. He also told how fluorescent and phosphorescent materials are helping to save the lives of soldiers, sailors and even warproduction workers. Said he:

"Luminescent materials are be coming important lighting tools in places where it is either impossible or undesirable to apply ordinary sources of light. On board a war vessel where the batteries or lamp bulbs have been destroyed or temporarily damaged, the ability of the crew to see the essential instruments and control valves by means of phosphorescent coatings, is an important factor in saving lives until resourcean be effected of repairs made.

The dock areas, where wartime precaute to make even a dim light undestrable, luminess ent materials make justishe the marking of danger spots, such as the edge of piers and obstructions which would constitute an accident haz ard in the event of a blackout. Fire extinguishers, first-aid kits and other objects which must be readily distinguishable in case of a blackout are being given markings which glow in the dark.

"On the instrument boards of fighting aircraft, the dials are given a fluorescent coating which shines when irradiated by invisible ultraviolet light. This enables the night fliers to see their instruments without being 'blinded' by the glare of an ordinary light. Already, luminous signs and markers have been installed in some war production plants to denote exits, doors, factory aisles, etc.

"The commercial and military possibilities of luminescent maternals are still being explored. The fluorescent lamp makes use of special powders known as phosphors which fluoresce when they absorbultraviolet radiations. Invisible radiant energy called 'black light' is produced in essentially the same way, except that the invisible ultra-violet rays are used to make materials luminescent which are at a distance from and outside the lamp.

"The two terms fluorescence and phosphorescence are some times confused. They represent the ability of certain substances to transform some form of energy into visible light. The results are indistinguishable to the eye, but between them there is one important difference. Fluorescence lasts only while the exciting energy source or ultraviolet 'black light' is present; phosphorescence continues after the light has been removed."



JEFFERY'S MARINE SHIP GLUE

for further information write

L.W. Ferdinand & Co.,Inc.
599 Albany Street -Est. 1873 - Boston, Mass.

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Hot off the Press

CATALOGS OF TODAY BECOME TECHNICAL HANDBOOKS OF TOMORROW

Servicing Safety Equipment, a Special Service Report by Oakite Products, Inc., New York City, points out the necessity for providing adequate facilities for maintaining personal safety equipment, and discusses equipment and materials required for effectively carrying out such a program.

Bronze Flanges, a folder giving full description and detailed specifications of the complete line of Barnes bronze flanges for silver brazing, has been made available to buyers of this equipment by the Barnes Manufacturing Company of Mansfield, Ohio.

Scaife Starting Tanks is the title of a bulletin just published by the Scaife Company of Oakmont, Pennsylvania, describing marine applications of diesel engine starting tanks. It contains valuable up-to-date information on capacities, dimensions and weights of vertical and horizontal tank installations.

Surface Condensers, announced by Ingersoil-Rand Company, New York, discusses structural and design features, steam penetration, air removal equipment, marine condensers, cross-flow condensers, essentials of a condenser plant, condenser accessories and pumping equipment.

Industrial Pioneering, issued by Swan-Finch Oil Corporation, New York, describes the progress in development of lubricating oils, and shows also how these products are helping to win the war.

A new bulletin on gas- or oil-fired rivet heaters, has just been issued by Mahr Manufacturing Company, Division of Diamond Iron Works, Inc., Minneapolis, Minnesota. It has complete illustrations of the different types of heaters, together with all specification data of sizes, burnering, consumption and other necessary information.

Forging furnaces, another bulletin by the company, has complete illustrations of the different types of these furnaces, together with specification data of sizes and other necessary information.

Mot-O-Trol, an electronic adjustable-speed drive which provides wide stepless range, automatic speed regulation and smooth, fast acceleration, is described in a new booklet by Westinghouse Electric and Manufacturing Company. It tells how Mot-O-Trol works, and lists its advantages. Charts show motor speed characteristics for a 20 to 1 speed range, 10 to 1 speed range, and costant speed.

Turning Rolls, Bulletin No. 18, interest and describing Ransole turning rolls for facilitating the weight in the state of the state of turning and turning rolls for facilitating the weight of large cylindrical tanks and drums, has just been released by a Industrial Division, Ransome Nothinery Company, Dunellen, Na Jersey.

Practically an encyclopedia safety equipment is the new safe catalog and manual released by B. McDonald Co., Los Angeles, man facturers and distributors of inditrial safety appliances. Covering tentire field of products designed reduce industrial hazards, it is unic in that it is divided into sections seasy reference.

Supplement No. 1, Bulletin N. 430, is announced by Peerless Eltrical Products Co., Los Angeles, cover its new Victory Line of transformers, now in production to me the War Production Board's limition order No. 1-293, which perms only a limited group of transforme to be manufactured for home rac replacement.

The Rivnut, an internally-thread and counterbored tubular rivet oveloped by the B. F. Goodrich Copany primarily for use as a nut plint in the attachment of its de-icers airplanes, which has a great matcher applications, both on airplane and in other industrial fields, is coered in a new manual.

Aqua-Restor is a bulletin from the Sales Dept., Aqua-Restor Division Mayer Mfg. Corp., Brooklyn, New York, introducing a new line of paisopray booths and dust collection systems. Its principles offer importate advantages to users of this type equipment, especially to companiengaged in war production.

Positive Plate Lifting Clamp, issue by Merrill Brothers, offers specific tions, capacities and price lists cove ing their line of "Volz" Positive Pla Lifting Clamps.

Metal Cutt-Off Band Saw is issue by Johnson Manufacturing Corp Sales Development Div. War pr duction companies engaged in mar types of metal fabricating work w take considerable interest in this buletin.





... stands the American Industrial Army—the men and plants that build the ships and weapons that win the headline victories.

NIKELADIUM Cast Steel Valves and Fittings are playing an increasingly important role in this vital job. Under the urgent demands of All-Out War, production has been speeded and performance has reached new high levels.

Right now our total job is to help win the war. After Victory is won, NIKEL-ADIUM—toughened and seasoned by its service at the Front—will again resume its many Peace-Time services.

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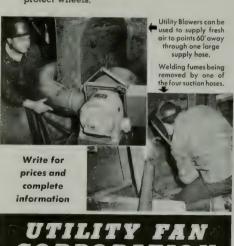
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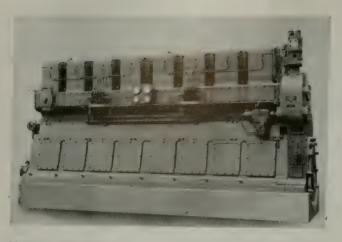
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Diesel Engines for Russia

An interesting side light on plans to relieve the critical power shortage in Russia, due to war destruction, was disclosed when The Cooper-Bessemer Corporation recently started production of their Type JS stationary diesel engines for the Soviets.

According to the U. S. Treasury Department, who worked out this arrangement through Lend-Lease authorities, the complete diesel-powered generator sets now under construction will be installed at strategic Russian locations for furnishing necessary electrical power or additional power to help in the turning out of vital war materials, or for other equally essential service in Russia's heroic war program.

In order to rush production of these eight-cylinder diesel units, The Cooper-Bessemer Corporation, which is continuing to break output records in supplying diesel engines and compressors for marine and industrial war purposes, will use certain facilities of both their plants in this program.

There are some unique facts connected with the purchase of these power units. For example, all gage dials, name plates, and instruction books are required to be printed in Russian characters, the latter to contain complete instructions, since it is expected that the operators of the equipment would be largely untrained and inexperienced, and in all probability would be women.

Recognizing the case with which the Type JS Diesel engine can be converted from diesel fuel to gas, or vice versa, all necessary parts for

Type J S diesel engine, similar to the 8-cylinder units being produced by The Cooper-Bessemer Corporation for Russia.

such a changeover are included with each unit shipped. It was emphasized how this feature would enable the Russians to utilize either oil or gas—depending upon the availability of the fuel in territories where they will be used.

The Russians expect to install the engines so that they can be readily moved to a new locality if and when this will meet more effectively the requirements of constantly changing battlefronts and war conditions.

"Big Scrappy" Saves Production Time

A heavy duty, 20-ton overhead crane, now in operation in the Iron Plant Division shop of the General Metals Corporation, Oakland, California, was built from scrap and said an 18-months' production delay.

Completed in three months, in unit, affectionately nicknamed "in Scrappy," is a composite represeive tion of salvaged and scrap parts govered from all sections of the county. The states of California, Washington, Nevada and Utah, to nama few, contributed parts to this unual crane.

The bridge was located some hedreds of miles out of Salt Lake Cy in an old power house that had be abandoned by the Utah Power delight Company for many years.

A Westinghouse motor, salvaid from a deserted rock quarry in levada, was overhauled and repair, and now supplies the power for e bridge.

Power is furnished by a General Electric motor salvaged from a day aged crane at Shasta Dam in Norern California.

A second G. E. motor was a earthed in a lumber mill in it Washington woods, and now poules the power for the trolley dre of this unit.

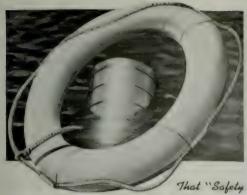
An old gold mine hoist in Angs Camp, California, provided the hot brake.

Somewhere in Southern Californ, an old G. E. welder was found the provided the limit switch contacts for the new crane.

End trucks and hoist, as well the control equipment, were all c signed, engineered and fabricated it he Maintenance Division of Genei Metals. This division also assemblishe secondary resistors from salvagiparts found in the shop. Hoist druisheaves and gears were also designe patterned and cast in Oakland. The load hook was forged in the Los A geles plant of the company.







Without food, shipwrecked samman rom slavy alive for weeks—but, without WATER, death comes swilliy. In several recent instances, had the standard of the several recent instances, had lor two or three days more—RESCUE might have outpaced DISASTES.

FLOATING Vacuum insulated AerVoiD carriers would guarantee this desperately needed ADDI-TIONAL supply—and without occupying any space in the lifeboat!

AerVoiDs would NOT compete with any of the means now in use, nor interfere with the Official Regulations.

Write for Bulletin J-2, entitled, "Aid for Shipwrecked Scilors Fighting to Stay Alive"

Margin of Water" is A LIFE SAVER

AerVoiD vacuum-insulated carriers float when filled to capacity. Carrier shown holds 11 gallons of water. Contents easily accessible without tools—only the hands being required.

ing required.
Stored on the deck, unlashed, they would be "self-launched" when the ship went down. Retrieved — AND LEFT AFLOAT—would supply that "Safety Margin of Water," meaning the difference between LIFE and DEATH for "Our Boys" at sea.

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This Viking pump is compact in design for use in cramped quarters. It is integrally mounted on the end of the motor and is connected by means of a flexible coupling. It is constructed of a special bronze to resist salt water conditions, with capacity and speed suitable for service performed.

Now just a word to civilian customers. When you are unable to get Viking Rotary Pumps at all . . . or to get them only after considerable delay . . . remember that WINNING THE WAR is Uncle Sam's

mmember that WINNING THE WAR is Unclo Sam's big job now . . . that the U. S. Navy has FIRST CALL on Viking's production facilities until Victory is won. Thanks for your patriotism and patience.



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FOOD FIGHTS, TOO—so another in our series of billboards, illustrated here, is devoted to a wartime problem. Designed to help the growers...revamped to help the packers... it's appearing in some 400 Western localities.

Will you join us in this recruiting effort? Perhaps there are persons in your employ or acquaintance who would patriotically spend vacations or other free time in fields or canneries . . . on just a suggestion from you.

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Cyl. Liners Pistons Piston Rings Cyl. Heads Valve Seats Valve Bodies Behind the trade mark "H.S.G.I." stands a record of over 125 years of an industry specializing in the manufacture of a superior, close grained, material made especially to resist wear at high temperatures.

Modern marine engine performance demands careful selection of the proper material for the vital cylinder parts.

Comparison of performance records shows greater efficiency with reduced maintenance costs when H.S.G.I. is used in the vital cylinder parts—liners, pistons, piston rings in both steam reciprocating and Diesel engines.

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W. S. A. Freight Rates

World-wide maximum freight rates on both bulk and general cargoes completely tabulated by routes and commodities, as ordered by the War Shapping Administration, have just been published by the N. Y. Journal of Commerce in its annual Maritime Day Edition, price 25 cents.

In the national interest, WSA has issued maximum basic rates and surcharges of charter hire. These rates are subject to periodic revision in the light of changing war conditions. Segregation of the various commodities and the weeding out of all dead orders has been stressed in this compilation. This method of tabulation enables foreign traders to determine immediately all rates and surcharges to any port on the globe.

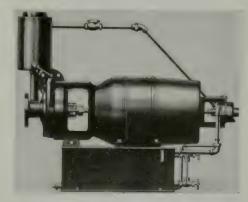
Self-Priming Bilge Pumps

Goulds Pumps, Inc., of Seneca Falls, N. Y., has recently introduced two new, self-priming pump units. Although used primarily for bilge pumping service, they will fill many other shipboard needs where self-priming pumps are required.

The unit consists of a Goulds "Close-Cupld" centrifugal pump with a Nash Hytor vacuum pump at the opposite end of the double-shaft-extended motor. They are mounted on a structural steel base, which forms a tank for holding the sealing liquid used in the priming pump. With the larger pumps (Goulds Double Suction and Multi-Stage Centrifugals), the vacuum pump can be directly connected to the double-extended motor or pump shaft; belt driven

from pump or motor shaft; or it may be separate self-contained unit. In operation, a vacuum is produced in the water pump by the vacuum pump until the water pump is fully primed and the liquid flows. At this stage, a float valve and vacuum release valve cut out the vacuum pump, which then simply circulates the sealing water against practically no load. Should the water pump lose its prime, the vacuum pump automatically reprimes it.

Self-priming bilge pump.



JULY . 1943



Wherever There's WAR ACTIVITY There's a DISTRIBUTOR Serving It

The distributor is rendering an indispensable service these days. With his complete familiarity with requirements and sources of supply, he is helping hard-pressed procurement offices to obtain vitally needed equipment and supplies for the Army, Navy, Maritime Commission and Air Force...not to mention his services to the thousand-and-one other industries engaged in war work.

He's alive to the needs of the times and his wide experience qualifies him as the logical force to ferret out those needs...he's here, there and everywhere—any hour of the day or night. He knows that he justifies his existence only in the measure that he renders service.

Long ago, Lunkenheimer recognized the distributor as the most efficient and economical means of marketing its products and built up nation-wide distribution through leading supply houses. We salute these distributors for the outstanding job they are doing in helping to speed up war production.



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LUNKENHEIMER VALVES

Eutectic Low-Temperature Welding

The tremendous expansion of of aircraft production has created a net for new, faster, and more reliab welding procedures to meet the eve increasing demand. Shortage of labo plus greater needs prompted manifacturers to look into various ne processes.

The Castolin Eutectic Low Ten perature Process, presented only recently on the market, was tested an used tentatively. The experiment have shown such satisfactory result that the day can be seen where a tremendous amount of aircraft weldin will use this process. Already a certain number of parts are produced b this method.

Because of this new field for Cas tolin Eutectic Alloy No. 16, we thin it is important to mention the following advantages accruing to the use othis rod:

- 1. Temperature of 1300 degrees;
- 2. High speed of operation;
- 3. Ease of joining delicate cluster, and assemblies;
- 4. Elimination of distortion and overheating:
- 5. Elimination of change in the structure of the steel.
- 6. Possibility of joining chromemolybdenum to other types of steel. also to malleable iron and cast iron, without having a brittle joint.

Following procedure is to be adopted:

- 1. Allow 1/32" to 1/16" split between the tubing. Use a small torch. Be sure the surface is clean. Apply Castolin Autochemic Flux No. 16 then preheat slightly 1" away on both sides of the seam until dull red is reached.
- 2. Use the torch horizontally to the tubing, heating only small sections of the circumference.
- 3. Now build up a jointing fillet at least \$\frac{1}{16}''\$ thick and \$\frac{1}{8}''\$ wide to join the two tubings, with the Castolin Eutectic Alloy No. 16. Reinforced fillets or beads of any desired thickness can be applied from 1/32" to \$\frac{1}{4}''\$ thick, in order to obtain the desired safety margin. The rod is kept in front of the torch. Allow a space of \$\frac{1}{4}''\$ between flame cone and metal surface. Only a small section (for example \$\frac{1}{2}'' x \frac{1}{2}'''\$) is heated at one time to a dull red. Only 1300 deg. F. is needed on the edges of the tubings where the Castolin Alloy should flow and bind. The Castolin

(Page 140, please)

PACIFIC MARINE REVIEW

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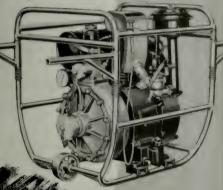
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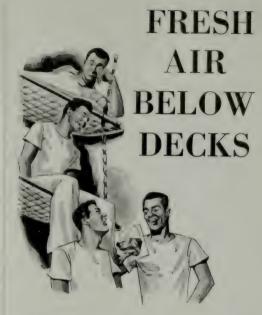


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EUTECTIC WELDING

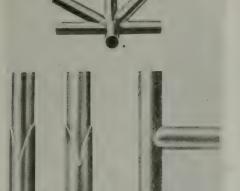
(Continued from page 126)

Autochemic Flux No. 16 is a perfect

temperature indicator; when it melts in front of the flame, the welder can start melting his rod. No fusion of the steel takes place. Tensile strength on chrome moly steel is as high as 117,000 lbs. per sq. in. when using Castolin Eutectic Alloy No. 16.

4. When the weld is complete, keep torch circling for three seconds around tubing to avoid too rapid cooling.

According to tests made in accordance with Army and Navy Specifications No. 20013B, it was proved that the tensile strength of joints made with Castolin Eutectic Alloy No. 16 is between 10.8 per cent and 35.4 per cent higher than the strength required by the specifications.



Examples of Eutectic low-temperature welding.

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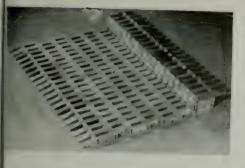
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Flexible Wood Link Mat

The development of substitute materials in the manufacturing of matting for the marine field became a vital necessity when rubber and other materials were put on the critical list, if the safety, sanitation and comfort features of matting were to continue available.

The research staff of the American Mat Corporation, of Toledo, Ohio, have come up with a number of most acceptable substitutes, all of which have been subjected to the most grueling factory tests to prove the ability to withstand abuse way beyond that encountered in common usage. In some instances the new types stood up even better than the originals.

The most recent devlopment, flexible wood link matting, has just been announced. This mat is substantially constructed of wood links. It is light in weight and can be rolled or folded up for easy handling and cleaning. Lying flat, it follows the contour of the floor.



The flexible wood link

Flexible wood link matting makes for safety underfoot, is comfortable to stand on, and affords good draininge. The ends are beveled to reduce the danger of tripping. It comes in natural wood color and is inexpensively priced. The mat is 1" thick, and comes in stock sizes: 18" x 32", 24" x 38", and 30" x 44", but can ilso be obtained in special sizes of any length and up to 36" in width.

Flexible wood link matting is parneularly applicable for use on only and greasy floors and around machinery.

To help in conserving present mating through proper care, American Mat has set up a special service and divisory department for the duration. Detailed literature is being made trailable for the asking.

New Emergency Lighting Unit

Requiring no fixtures or wiring, other than plug-in connections to the comply, the new Exide Lightguard Emergency Lighting Unit for war-

time service is announced by The Electric Storage Battery Company, Philadelphia.

It has been designed to meet the need for a source of emergency light in war plants, arsenals, ordnance plants, shipyards, factories, and other places where wartime activity has increased the potential dangers resulting from power-line failure, fires, and sabotage. It throws a beam of light 50 ft. wide a distance of 150 to 200 feet, covering an area of 7500 sq. feet.

With power lines loaded to capacity, plant feeders are in many cases overloaded, needing only a slight upsetting load condition to produce a lighting failure. When the lights go out and machinery continues to run on momentum, the Lightguard, by automatically switching on a broad beam of light, helps to reduce the accident hazard, particularly in those plants where men and women unfamiliar with machinery are working. It is particularly useful in windowless plants, many of which have been built recently.



Emergency lighting unit.



for servicing workers near their work

Industrial war plants, shipyards and aircraft plants, munitions and loading plants, are finding necessary PORTABLE equipment for transporting hot foods and liquids to workers NEAR THEIR WORK. Immensely increased personnel, wide-spread operations, overcrowded cafeterias, many workers far from cafeterias, care necessitating de-centralizing war-plant feeding operations and a need for portable equipment in which hot foods and liquids can be kept hot while being transported anywhere indoors or outdoors throughout the plant.

Over 100 large war plants already have AerVoiDs in service and doing a job no other equipment can do so efficiently and with such small expenditure of critical materials, small upkeep, low operation cost.

How and why AerVoiDs are going into war plants in constantly increasing numbers, in the words of the users themselves, is told in a new circular.

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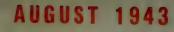
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Now in full operation, this new Emsco pickle and paint plant is one of the largest, most modern, and best equipped in the United States, with a capacity for handling large volumes of hull plate, armor plate, and other parts of a ship's structure.

The process offers many important advantages to shipbuilders. It eliminates the slow, costly work of cleaning a complete assembly; protects the steel during the construction period; facilitates fabrication by increasing welding efficiency; and makes possible stronger welds at reduced costs.

This new plant provides west coast shipbuilders with all the facilities and advantages of Naval and private establishments of this character, and insures quality workmanship combined with fast, dependable service. Your inquiries are invited.

EMSCO DERRICK & EQUIPMENT COMPANY





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Steamship Association

Shipowners Association of the Pacific Coast

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Pacific IMARINE REVIEW

Accident Prevention Off the Job

The prevention of accidents is good business, and American industry—at least the larger plant units long has been convinced of it.

A shrinking accident frequency rate, or no accidents at all, is followed automatically by increased efficiency just as surely as a dog is followed by its tail.

Industry has demonstrated beyond the shadow of a doubt that the frequency of accidents in its shops can be cut down and eliminated.

But how about accidents that strike down employees while they are off the job—away from work? Are they management's business? What a man does on his own time obviously is pretty much his own business and something for which he has to answer only to his own conscience and the laws of his community.

However, there is no disputing the point that an accident suffered off the job keeps a man away from his work just as effectively as an accident suffered on the job.

When war broke and man power got scarce and ever more scarce, progressive plant managers stopped stroking their chins over the lengths to which management might go to control the off-the-job accident problem.

Company after company began to tally up its accident score. They found that absenteeism caused by off-the-job accidents was five, seven, as much as ten times greater than absenteeisms caused by on-the-job accidents.

One large corporation lost three employees through fatal work accidents in 1942—but 47 of its employees were killed in accidents that occurred off the job!

The National Safety Council reports that last year, while 18,500 workers lost their lives as a result of accidents on the job, no fewer than 26,500 were killed on the streets, in other public places and at home.

What is the off-the-job accident score of your employees? How does it compare with the on-the-job score in your plant? If your experience tells you that something should be done about your off-the-job accident problem, without meddling at all with their private lives, the National Safe-ty Council is the "doctor" you should call in. The Council, out of its 30odd years of experience in prescribing for accident ills of all sorts, has developed a new, complete, intelligent, educational program for industry to use in combating off-the-job accidents. We've seen and studied the ingredients of this program and recommend it to you.

Labor Grievances

In the week ending June 25 last, there were referred to the regional offices of the National War Labor Board 141 labor dispute cases. As of that date the Board already had a backlog of 1564 disputes awaiting settlement. It is very evident from these figures that the machinery of the

board is getting swamped and will be completely clogged.

Most political observers expect these conditions to be aggravated by the Smith-Conally anti-strike bill, which will bring a larger flood of disputes to the Board

W. L. B. is urging industrialists and manufacturers to set up within their own plants simple, effective arbitration machinery through which the majority of these disputes can be settled without bringing them to the Board.

A number of leading firms have al ready set up this type of in-plant arbitration, and W.L.B. has prepared complete helps for anyone who desires to use them in preparing his labor relations departments for modern self-contained arbitration of any labor grievance.

Convoy

"There go the ships . . . there that Leviathan" . . .

Watching the gray hulls, seeing them slowly pass

Out through the narrow river, under the span

Of arching bridges, I hear again the

At Sunday School repeating: "Thou hast made

All these, they wait upon Thee, they are filled.

Why should our hearts be troubled and afraid?

Our days are shadows, but the Lord doth build

Eternal and doth judge all that we are.

He hath remembered His covenants forever:

He hath destroyed His enemies afar

And scattered all the proud. Clothed with the light,

He walketh with the wind; He faileth never."

Lord, be with all the ships that sail tonight!

Sara King Carleton.

Reprinted from the New York Herald Tribune



Port quarter view of LT-1 on her trials.

ARLY in 1942, the Army requisitioned from the Daunt-less Towing Company a new steel diesel-powered tug, the Dauntless 15. So highly were the Army authorities impressed by the performance of this tug that they promptly ordered eight duplicates from her builders, the Jakobson Shipyard at Oyster Bay, Long Island, and specified Enterprise diesels equipped for supercharging. This group of tugs are officially designated LT boats, but each has a name: Number one, the Major Ethel

Launching of LT-2 on marine railway.



Diesel Fower FOR

ENTERPRISE ENGINES WITH EXHAUST TURBO-SUPERCHARGERS SPECIFIED FOR MOST MODERN SEAGOING TOWBOATS

A. Robbins, was put through her official trials on April 1, and the others are being finished at short intervals thereafter.

The hull of the LT class is 113 feet long with a beam of 25 feet, and is of all-welded steel construction. Commodious and comfortable quarters for the crew are located in two compartments fitted in the forehold. As will be noted in an illustration, these rooms are nicely equipped with comfortable berths, tables and seats, and are steam heated and mechanically ventilated. Practically all the rest of the underdeck hull space is occupied by machinery and fuel, lube oil and water tanks.

The superstructure on the main deck level is arranged to provide:

Four double staterooms, two on each side of a fore and aft passage; access to the crew's quarters at the forward end and to the engine room at the after end of this fore and aft passage; an athwartship passage leading to the deck port and starboard at the after end of fore and aft passage;

ON THE FACING PAGE:

- (1) One of the compartments for crew in forehold.
- (2) Captain's bedroom.
- (3) Pilot house looking forward, featuring steering wheel and binnacle.
- (4) Radio room with short-wave, longwave and broadcast equipment.





ARMY TUGS









Engineer's stateroom.



and a shower and toilet compartment

port and starboard on the after side of athwartship passage. Next in order aft is the upper portion of the engine room. On the aft side of this space in the port corner is located a small room fitted as a laundry. Aft of the engine room is the galley and messroom. The Webb 40-inch oilburning range, and a stainless steel sink and ample cupboard space are installed against the forward bulkhead, and the mess table against the after bulkhead, one on each side of the trunk that carries the towing cable down to the towing machine in the after end of the engine room.

Above this deckhouse at the forward end is the standard, elevated tug pilot house, plus a chart room, the captain's cabin and a radio room.

The pilot house is thoroughly equipped for navigation, including an R. C. A. radio direction finder.

It is said of the tug that, "there ain't much to her but her power

plant," and certainly on these LT class Army tugs, that description fits perfectly.

The propulsion engine in each tug is a four-cycle, eight-cylinder, super-charged Enterprise diesel, direct connected to the shaft. With a bore of 16 inches and a stroke of 20 inches, this engine develops 1200 hp at the rated speed of 275 rpm. It is a self-contained unit with built-in service pumps driven off the crank shaft at the forward end, and with Elliot-Buchi exhaust turbine supercharger built on at the after end. As arranged

After end of pilot house, showing R.C.A. radio direction finder and tell tale board for running lights.

on the Enterprise engine, the supercharger occupies the space directly over the flywheel and thrust block, and the overall length of engine, including those two items, is not increased.

All control instruments for the engine are located on a small panel above the built-in auxiliaries at the forward end, and are operated by two small levers, one of which regulates starting, reversing and stopping, and the other acts on the Woodward hydraulic governor to regulate fuel injection and speed. Equipment includes: Weston tachometer for engine

Galley and mess table.

speed; Alnor pyrometer for cylinder exhaust temperatures; and Viking alarm indicators and howler to protect engine against failure of lubricating oil or of cooling water.

During trials this engine on emergency reverse tests goes readily from full speed ahead through reverse and is picking up speed astern all in less than 10 seconds.

With the fuel lever set in one position for slow speed, the engine may be started, stopped, or reversed by the movement of the maneuvering lever, which is very easily operated with one hand. When the tug is in the clear and the tow is straight away, speed is adjusted to order by slight movements of the fuel lever.

All cooling of this engine is effected by fresh water circulation in a closed system. A Ross heat exchanger cools the fresh circulating water. Two fresh water tanks, built into the en-

me room bilges, provide make upresh water for this system, and serve is ballast tanks for the hull. Pumps or circulating the cooling water are with into the engine and dissent off he crank shalt. A Viking is tary on ulates the salt water for the cooling ide of the heat exchangers, and a exersible centrifugal pump circulates he fresh water.

Lubricating oil is pumped from the ump in the engine bed plate to the arious bearings on the engine. A sharples centrifuge is used for cleaning, and a Ross heat exchanger for cooling the lubricating oil.

Fuel oil is pumped to the engine hrough a Briggs clarifier and Nugent lters and delivered to the atomizing ozzles by an American Bosch sys-

> The 8-cylinder, 1200-hp Enterprise supercharged diesel dominates the engine room space.

em with individual pumps, each nounted on top of the crank case diacent to the cylinder which it erves.

Tankage in the machinery space, n addition to the fresh water ballast anks already mentioned, includes: A ubricating oil tank on the port side. large fuel oil tank on the starboard ide, a domestic water tank, and a potable water tank.

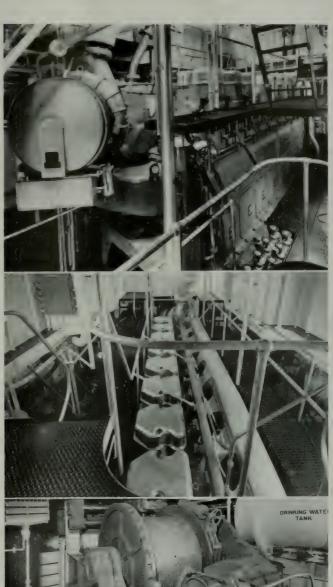
Two Electro-Dynamic generating units, one of 25- and the other of 45- two capacity, are mounted on the same haft and driven by V belt from the

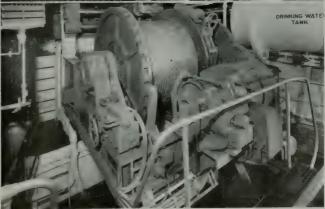
Upper engine room, featuring lube o'l and kerosene tanks, cylinder tops and exhaust turbo-supercharger of Enterprise propulsion diesel. Note insulated exhaust from exhaust turbine.

main engine shaft. The smaller genitator, operating in connection with a 100-cell Edison storage battery, proprides ample electric energy for ship's service and lights. The 45-kw mathine provides power exclusively for the 50-hp Reliance motor of the Almon Johnson electric towing mathine. This machine is located in the offer end of the engine room space and its cable passes up through a verical trunk, over a large sheave, and out through the towing chocks.

For standby service, an auxiliary (Page 88, please)

Almon Johnson electric towing machine in after section of engine room. At bottom center, propeller shaft may be seen passing under this machinery.







URING the spring and summer of 1942, there was built at Richmond on a site between Richmond shipyards No. 1 and No. 2, a large, open-ended shop building especially designed to prefabricate and preassemble complete deck houses for the Maritime Commission EC-2 type (Liberty) steamers.

The building, structurally, is composed of two sets of steel-supported crame ways, each with the stability to support two overhead electric traveling bridge cranes of sufficient capacity to handle easily the heaviest weights involved in the proposed process. For the shop portion of their length, these crane ways are roofed and sided. As will be noted in the illustration, the crane ways extend at both ends of the shop.

Inside the shop, along each wall,

is a row of offices and storerooms. Under each set of crane ways there are four tracks. On each pair of tracks, especially-designed steel carriages travel on small flanged wheels, and carry similar wheels on their upper edges. Resting on these upper wheels are flat steel frames spanning both pairs of tracks. These latter frames carry on their under side tracks which engage the upper wheels. The upper sides of the frames carry longitudinal bars which are adjusted to fit the camber of the main deck beams of a Liberty steamer. It will be apparent that this assembly is designed for moving a heavy weight at a slow pace on "live' rollers, which is the most efficient method of accomplishing that result.

Since this shop was built, the two yards, Richmond No. 1 and Rich-

Richmond

mond No. 2, have in practice, and officially, become one yard, and this "pre-fab" section of the yard has included other shops and open parks in which other sections of Liberty hulls, such as double bottoms, fore peak, after peak, shaft alley and cofferdam,

Above: General view of "Pre-Fab" at Richmond, taken from the starting end.

Left: Jig at the end of "Pre-Fab" shop for forming the main deck section in way of deck house.

are prefabricated, preassembled, and, to some extent, pre-equipped.

At the easterly end of the deck house shop there is a jig which represents in reverse that portion of the main deck of a Liberty hull which supports the deck house. On this, the fabricated deck plating is assembled and welded, and the deck beams welded in place. This jig gives the advantage of "down hand" welding on this large surface. The deck section, after welding, is turned over by the cranes and located very carefully right side up on the frames over the carriages.

The deck house structure, with its piping, wiring, ventilating ducts and all built-in features, is built up on this deck section as it progresses through the shop. The length of the shop allows three deck houses on the tracks simultaneously, so that the two bays accommodate six deck houses constantly in progress through the shop.

Preceding the design and erection of this shop, considerable investigation proved that while it would be possible to preassemble the entire deck house and deliver it to the hull in one piece, such a stunt was neither

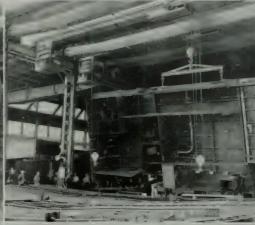
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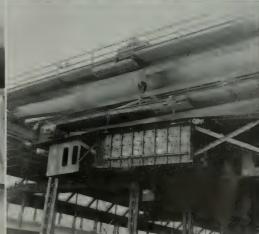
A sequence of five pictures showing two "Pre-Fab" cranes turning over a prefabricated section preparatory to spotting it in the deck house assembly.

"Pre-Fab" Technique

A PREASSEMBLY SHOP FOR LIBERTY DECK HOUSES











dled on the carriages, onto the trailer bodies, and by cranes onto the hull. The location and nature of these members was calculated, and the marking of plates and structural members for their attachment became a routine step in fabrication.

Around the outside of the "Pre-Fab" shop are large welding park areas whereon are assembled many parts of the deck house structure. For instance, uptakes from the boilers, bulkheads and partitions are built up in these parks and transferred to the crane way area, where they are picked up by the cranes, spotted in one of the deck house assemblies, and welded in place. Cer-

Strain distribution cables and turnbuckles to take care of possible distortion in lifting,



tain equipment is built into these assemblies. This includes heavier items like the galley range, the sink assembly, cupboards, berths and mess tables. On some ships the deck houses have come out of "Pre-Fab" completely equipped with everything and ready to go to sea. This would be a possible condition for regular schedule, but the risk of damage is great and the advantage in saving of time negligible.

When the deck house assembly reaches the westerly end of "Pre-Fab," its sections are separated by burning out the tack welds on the division joint, and disconnecting all pipes, wiring and other connections.

Left: Welder's turnbuckles and clamps for pulling partition to location.

Right: Attachment of wire sling for lifting.

expedient nor economical. So after careful study it was determined to creet the entire deck house in the shop, with certain joints only tacked, and with all piping, wiring and ducts arranged for disconnections in line with these joints. This made it easily possible to divide the finished deck house into four sections for transportation to the hull on the ways.

Model study indicated the necessity for certain internal bracing and strain adjusters in order to preserve the dimensions and shape of these sections while they were being hanThe end section is then drawn out on its carriage and frame over four large "I" beams, which are supported in open saddles mounted on hydraulic ram plungers. It is now completely out of the shop and over a concrete roadway. The hydraulic rams lift it on its frame clear of the carriage, and the carriage is drawn out from under the frame. When all is clear, a huge trailer is backed under the frame, and by means of the hydraulic rams the frame and deck house section are lowered onto the bed of the trailer.

ON THE FACING PAGE:

The sequence of illustrations shows the progress of the deck house through "Pre-Fab" and the transfer of a section to truck trailer for Selivery to hull.

A tractor then hauls the trailer to the hull for which the deck house is intended and the building way cranes lift the section of deck house and spot it on the hull.

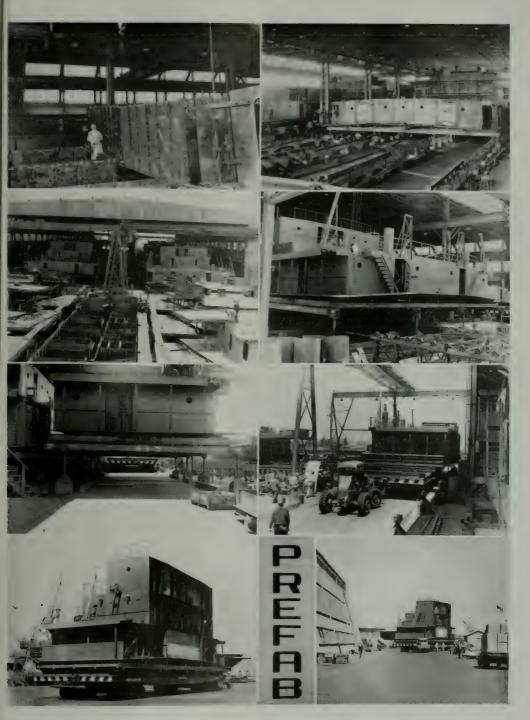
The trailer with the frame is hauled back to "Pre-Fab," where the frame is used again for starting another deck house through, and the trailer picks up another section of finished deck house for delivery to the hull.

It will be readily understood that in comparison with the old method of assembly on the hull, this prefabrication, preassembly and pre-equipment of deck houses is a great conserver of elapsed time and of man hours on the ways and at the out-fitting dock. It has many advantages, among which the following are out-standing:

(1) Special gangs of men, trained and experienced in this operation,

(Continued on page 78)











Above: the warehouse is a reinforced concrete structure.

Low - voltage switchboard for distributing welding current.

A compressor in

Below, left: Metalclad switchboard and throat - connected transformer in the substation.

Below, right: Metal - clad switchboard in the Power House. URING World War I, the Oakland Estuary off San Francisco Bay proudly flaunted itself as "The American Clyde." Today that estuary is again a concentrated mass of busy shipbuilding and ship repair yards. Perhaps the most interesting yard on that channel is the newlycreated Bethlehem Alameda Shipyard, Inc., operated by the Shipbuilding Division of the Bethlehem Steel Company. This yard holds special interest for several reasons.

First, it is a completely new yard, designed and built by experienced shipbuilders for the Maritime Commission.

Second, it is designed to build the largest commercial vessels yet built on the Pacific Coast.

Third, it is designed and built as a permanent addition to the shipbuilding facilities of the Pacific Coast.

Fourth, it is presently at work building the largest merchant vessels now under construction in an American shipyard, vessels over 600 feet between perpendiculars, and with a speed of better than 20 knots.

The yard is built on part of the huge estuary frontage that was occupied during World War I by the Bethlehem "Liberty" yard. On the



Page 66

Alameda Yard

western end of that frontage is located Bethlehem's Alameda Ship Repair Yard, and on the southeast portion is the Bethlehem Steel Company's huge structural steel fabricating shop.

Through the courtesy of the officials of the Shipbuilding Division of Bethlehem, and of the Maritime Commission, we were permitted to inspect this great shippard and to publish this description and these illustrations.

Every shipyard is laid out around the location and arrangement of its shipbuilding ways. The new Bethlehem Alameda yard has four ways, arranged in two pairs. Around the end and sides of each pair are huge preassembly and welding parks. Each pair of ways is served by three crane tracks, one in the center and one on each side, making six crane ways to serve four building ways. These crane ways run right out into and through the fabricating park at the head of the ways, and they are served by several 30-ton cranes to each crane way. The cranes are American and Clyde Whirleys, with portal towers of sufficient height to clear the scaffolding around the hulls, and with booms of sufficient length to cover the

Above: Paint Shop
—a typical space,
showing utilization
of structure under
inshore end of
ways.

A corner of the Sheet Metal Shop, showing a Cincinnati brake.

One of the pipe threading machines.

Below, right: A U. S. Pipe Bending machine.

Below, left: Punches, drills and trimmers in the Sheet Metal Shop.











welding parks or to spot plates. shapes or sections anywhere on the

reinforced concrete, and are arranged rooms, locker rooms, lavatories and specialty shops. The total space thus occupied would be the equivalent of a one story building 90 feet wide and ly two acres of floor space. This armaterials, equipment and tools in the location most easily accessible to the work on the welding parks and on the

As designed and built, these ways will take vessels up to 700 feet length and 90 feet beam. They are therefore a welcome addition to the per manent ship construction plant of the Pacific Coast, as they practically complete the facilities on this coast for building merchant vessels of any size likely to be required for Pacific Ocean

A new practice noted on the welding racks at this yard is the complete flooring of these racks with steel plate. This was done for more complete electrical contact and for safety. On the ordinary type of welding rack made with rails, experience has demonstrated that: There are many falls, resulting in much lost time; greater than normal wear and tear on welding cables and other equipment; and excessive time required in moving and spotting portable equipment. The completely plated welding rack eliminates all these wasteful features and enables the welder, tacker and other craftsmen to concentrate on the job in hand, free from the worry of constantly watching their footings.

The entire surface of this yard is paved, and all electric wiring and pneumatic and hydraulic piping is carried in concrete tunnels.

Application of electric power is very complete and right up to the minute. At substation No. 1, located on the westerly side of the yard, a 12-kva cable is brought in from the Alameda city power lines, and there, through a General Electric metal-clad switchboard and a standard Pyranol cooled transformer, the power is transformed to 440 volt for distribution to the motors operating the Chicago Pneumatic nr compressors in the substation, and to the machine

The 12-kva cable runs from substation 1 to substation 2, located under the inshore end of Way 1 shore

the high voltage is again transformed to 440 and distributed to motor generator sets which convert it to low voltage direct current for welding. This welding current is distributed by a standard open-front switchboard to circuits serving welding outlets on Ways No. 1 and No. 2, and the adpacent welding parks. From substation No. 2, the 12-kva cable continues on to substation No. 3, which performs the same function and is a duplicate of No. 2. Ways No. 3 and No. 4, and the welding parks adjacent thereto, are served by substation No 3:

From No. 3, the 12-kva cable proceeds to station four, which transforms to 440-volt a.c. current and serves power circuits carrying power to the outfitting docks, the warehouse, the plate shop and the service shops. All of the high-voltage switchboards are of the General Electric metal-clad type which are electrically dead, front and rear, top and bottom. These switchboards are throatcoupled to the transformers, which means that all cables connecting the boards with the transformers are carried in large rectangular metal ducts. The transformers used are the standard Pyranol-filled type, with air cooling of the filling medium. This system was worked out to give the least possible distribution at low voltage. It carries provision for connection to main Pacific Gas and Electric Company circuits through a proposed submarine cable across the estuary. so that the yard could still operate in case of any breakdown in the city system.

Steel can come into the yard by either rail or water, and is distributed immediately by traveling cranes to the storage racks which flank the southerly side of the welding park at the head of the building ways, and extend easterly along the burning park area on the southerly side of the plate shop.

The plate shop is well over 1000 feet long, with a 700-foot mold loft surmounting one end. It is of steel construction and is laid out and equipped to handle the largest plates and shapes used in merchant ship construction

A double-ended furnace, with a large bending slab at each end, takes care of the ship frames and all shape bending. The slabs are equipped with frame hauling devices, with the most modern type of pneumatic bulldozers, and with all the necessary hand tools for this type of work.

Other notable pieces of equipment in the plate shop are: A very large Baldwin Southwark press brake; sev eral large punches equipped with roller tables; and an unusually large set of bending rolls.

Along the southerly side of the plate shop is located a large flamecutting park, equipped with burner tables and with automatic flame-cuting machines. Here the plates and shapes are trimmed to templet and prepared for fabrication in the plate shop. From the plate shop, the material moves directly to the welding preassembly parks at the ways,

North of the plate shop is a huge concrete construction warehouse for storage of machinery, equipment, fittings and miscellaneous materials. This building is equipped with large automatic self-leveling elevators, and with sprinkler system and adequate provision of fire extinguishers.

North of the warehouse is located a large service shop building housing all of the shops that work on the various hull equipment and outfitting. These include:

A large joiner shop equipped with all the latest wood-working machin-

A pipe shop, complete with groups of U.S. Pipe and Manufacturing Co. pipe bending machines, pipe threading machines, bending slabs, and furnaces; and pipe-cutting machines;

A completely equipped copper

shop;

A sheet metal shop with a very large variety of machine tools for trimming, straightening, bending, drilling, punching and forming light gage sheets of ferrous and non-ferrous metals;

A blacksmith shop;

A boiler erecting shop, equipped to assemble completely the modern marine water-tube boiler; and

An electric shop equipped to execute efficiently all marine electrical preassemblies and to prepare electrical machinery, fixtures and wiring for installation aboard the hull.

This service shop building is adjacent to the outfitting docks, of

ON THE FACING PAGE: VIEWS IN THE MACHINE SHOP

- (1) Part of a battery of large American drill presses.
- (2) Large Niles lathes in main bay.
- (3) A corner of the shop, showing Warner & Swasey turnet lathes.

 (4) Another view of Warner & Swasey turnet lathes.
- (5) Le Blond lathes.
- (6) General view of the main bay.
- (7) Part of a battery of drill presses. (8) General view of a part of the shop.





- (1) Bending Slab 1.
- (2) Bending Slab 2.
- (3) Bending Slab 3.(4) Punch in the Plate Shop

Bird's-eye view of hull, looking aft.



which there are two, with a large basin between,

Machine Shop

The machine shop is of steel construction, with adequate fenestration and with ample head-room. It is served by large cranes on overhead runways, a 30-ton-capacity crane on the central bay and a 15-ton unit on each side bay.

The tooling of this shop has received a good deal of study, and the result shows readiness for all the heavy machine tool operations incident to the preparation of heavy ship machinery and intelligent placement of these tools from the production viewpoint. At one end of the central bay is a group of three large heavy-duty Niles engine lathes, especially adapted for turning heavy propeller shafting. One of these lathes has a 49-foot bed.

Centrally located in the central bay are several large boring mills, including such well-known mills as Giddings and Lewis, Underwood, and Ohio. The Underwood mill is a horizontal type with a large floor-level, stationary table, and is especially adaptable for machining large steel castings, such as stern frames.

Featured in the West bay of this shop are a large group of Warner and Swasey Universal turret lathes. These are set on the angle best adapted for lighting and for handling of materials and finished products. This bay of the shop houses also several miscellaneous machine tools, annealing furnaces and presses.

The East bay features:

Nineteen Le Blond engine lathes of various sizes and types, ranged along its westerly side; a machinist bench for hand work, built against the long stretch of the East wall of the shop; many drill presses of various sizes, including such well-known makes as Carleton, Bickford, and America; and a well-equipped tool room in the southeast corner.

This shop and its equipment are

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Above: left, welding park between Way 2 and Way 3; right, bird's-eye view of Hull No. 1, looking forward.

of ample size and capacity to take care efficiently of any machine tool problem connected with shipbuilding, ship repairing or marine engine work.

A modern wood construction building, with controlled heating and ventilation and adequate natural and electric illumination, provides spacious offices for the yard's executive and technical staff, and a large drafting room space in yard office building. In addition to this administration building, there is a large "yard offices" building, a threestory wooden structure which provides office space for Maritime Commission inspectors, Maritime Commission auditing force, Maritime Commission resident engineer's office, American Bureau of Shipping inspectors, timekeepers, yard superintendents, and the clerical and technical staffs pertaining to all of these shipbuilding auxiliaries.

While the yard is not completely finished or fully equipped, work is forging ahead on the ships. Each of the four ways has a hull under construction, and the schedule calls for the first launching in November. For strategic reasons, we cannot give the detail characteristic of these vessels, but we can say that they are the largest merchant ships ever built on the Pacific Coast, and that they will be readily convertible to luxury passenger liners when the time comes for laying aside the machine guns and once more taking up the peaceful, orderly progress of American ship-

Right: Burner trimming a plate to templet.



Below: left, part of the welding park at the head of the ways; right, welding racks across head of the ways.





Causes and Cures

of Arc Welding Troubles

H. C. Coleman

C. H. Jenninas

The accomplishment of the remarkable goal of American ship production has been made possible in a large part by the extensive acceptance of welded construction. Factors which have influenced the wide use of welding have been: a good welder could be trained in a comparatively short time; equipment for new shipyards to build welded ships was more easily and quickly obtained than for building riveted ships; welding procedure is generally conducive to rapid ship production.

However, careful adherence to fundamental good welding procedure and sequence is essential. To further the training of both welders and supervisors, it is desirable that all possible aids and suggestions for the improvement in welding techniques be made available.

There are many fabricating difficulties encountered in the arc welding of any structure. Some of these difficulties seriously affect the strength and serviceability of the ultimate structure, while others are less important and only influence the cost or appearance.

The correction of these troubles is generally not difficult, providing the welding operator or engineer has a knowledge of the conditions causing them. In order to assist in detecting and correcting these undesirable factors, 14 of the more common troubles are illustrated by photographs and discussed from the standpoint of causes and methods of correction.

Mr Coleman is manager, Marine Engineering, and Mr Jennings is a welding engineer, Research Laboratory, Westinghouse Electric & Manufacturing Company, East Pitrisburgh, Pa.

DISTORTION

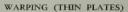
CAUSE

(A) Shrinkage of deposited metal pulls parts to-gether and changes relative positions.

- (B) Non-uniform heating of parts during welding causes them to distort before welding is fin-ished. Final welding of parts in distorted position prevents the maintenance of proper dimen-
- (C) Improper welding se-

CURE

- (A) Properly clamp or tack parts to resist shrinkage
- (B) Pre-form parts sufficient to compensate for shrinkage of welds.
- (C) Distribute welding to prevent excessive local heating. Pre-heating desirable on some heavy structures.
- (D) Removal of rolling or forming strains before welding is sometimes helpful.
- (E) Study structure and develop a definite sequence of welding.



- (A) Shrinkage of deposited weld metal.
- (B) Excessive local heating at the joint.
- (C) Improper preparation of ioint.
- (D) Improper clamping of
- (A) Select electrode with high welding speed and moderate penetrating properties.
 (B) Weld rapidly to prevent excessive
- local heating of the plates adjacent to the weld.
- (C) Do not have excessive spaces between the parts to be welded.
 (D) Properly clamp parts adjacent to the joint. Use back up to cool
- parts rapidly.
 (E) Use special welding sequence; step
 - back or skip procedure.
- (F) Peen joint edges slightly before welding. This elongates edges, and the weld shrinkage causes them to pull back to the original





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WELDING STRESSES

(11 11

- (A) for 's too neid.
- (B) In proper welding se
- et) Ir erest in all welds expecially in beavy parts

CURI

- (A) Slight in a court of particle of the second of the court of the co
- (B) Make weld as a few poles as
- (C) Peer each deposit of weld metal-
- (D) Arred teached post-ap a tipor 1200. It for the best per meloot thackness
- (1) Develop welders prove here that permits all parts to be the to never as long as possible

SPATTER

- (A) Inherent property of some electrodes
- (B) Excessive welding current for the type or dr ameter of electrode used
- (C) Excessively long are
- (D) Arc blow

- (A) Select proper type of electrode
- (B) Do not use excessive welding our rent
- (C) Hold proper are length
- (D) Reduce are blow
- (E) Paint parts adjacent to weld with whitewash. This prevents spalls from welding to parts and makes removal easy.

UNDERCUT

- (A) Excessive welding our rent.
- (B) Improper manipulation of electrode.
- (C) Attempting to weld in a position for which the electrode is not designed.
- (A) Use a moderate welding current and do not try to travel too rapidly.
- (B) Do not use too large an electrode If the puddle of molten metal becomes too large, undercut may result.
- (C) Excessive weaving will cause undercut; consequently it should not be used.
- (D) A uniform weave will aid greatly in preventing undercut in butt welds.
- (E) If an electrode is held too near the vertical plane when making a horizontal fillet weld, undercut may be obtained on the vertical plate

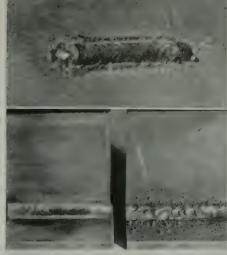
CRACKED WELDS

- (A) Joint too rigid.
- (B) Welds too small for size of parts joined.
- (C) Poor welds.
- (D) Improper preparation of joints.
- (E) Improper electrode.
- (A) Design the structure and develop a welding procedure to eliminate rigid joints.
- (B) Do not use too small a weld between heavy plates. Increase the size of welds.
- (C) Do not make welds in string beads.
 Make weld full size in short section 8" to 10" long.
- (D) Welding sequence should be such as to leave ends free to move as long as possible
- long as possible.
 (E) Insure that welds are sound and the fusion is good.
- (F) Preheating parts to be welded sometimes helpful.
- (G) Prepare joints with a uniform and proper free space. In some cases a free space is essential. In other cases a shrink or press fit may be required.

POOR SURFACE APPEARANCE

(A) Improper current and arc voltage.

- (B) Overheated work.
- (C) Poor electrode manipulation.
- (D) Inherent characteristic of electrode used.
- (A) Insure the use of the proper welding 'technique for the electrode used.
- (B) Do not use excessive welding currents.
- (C) Use a uniform weave or rate of travel at all times.
- (D) Prevent overheating of work.













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POOR FUSION

CAUSE

- (A) Improper diameter of electrode.
- (B) Improper welding current.
- (C) Improper preparation of joint.
- (D) Improper welding speed.

CURE

- (A) When welding in narrow vees, use an electrode small enough to reach the bottom.
- (B) Use sufficient welding current to deposit the metal and penetrate into the plates. Heavier plates require higher current for a given electrode than light plates.
- (C) Be sure the weave is wide enough to melt thoroughly the sides of a joint.
- joint.
 (D) The deposited metal should tend to sweat onto the plates and not curl away from it.

INCOMPLETE PENETRATION

- (A) Improper preparation of joint.
- (B) Use of too large an electrode.
- (C) Insufficient welding current.
- (D) Too fast a welding speed.
- (A) Be sure to allow the proper free space at the bottom of a weld.
- (B) Do not expect excessive penetration from an electrode.
 (C) Use small diameter electrodes in a
- narrow welding groove.

 (D) Use sufficient welding current to obtain proper penetration. Do not weld too rapidly.

POROUS WELDS

- (A) Inherent property of some electrodes.
- (B) Not sufficient puddling time to allow intrapped gas to escape.
- (C) Poor base metal.
- (D) Too short an arc length.
- (A) Some electrodes inherently produce sounder welds than others. Be sure the proper electrodes are
- (B) Puddling keeps the weld metal molten longer and often insures sounder welds.
- (C) A weld made of a series of strung beads is apt to contain minute pinholes. Weaving will often eliminate this trouble.
- (D) Do not use excessive welding currents.
- (E) In some cases the base metal may be at fault. Check this for segregations and impurities.
- (F) Do not hold too short an arc.

BRITTLE IOINTS

- (A) Air hardening base
- (B) Improper preheating.
- (C) Unsatisfactory electrode.
- (A) When welding on medium carbon steel or certain alloy steels the heat affected zone may become hard as a result of rapid cooling. Preheating at 300-500° F, should be resorted to before welding.
- (B) Multiple layer welds will tend to anneal hard zones.
- (C) Annealing at 1100·1200° F. after welding will generally soften hard areas formed during welding.
- (D) The use of austenitic electrodes is sometimes desirable on steels which harden readily. The increased weld ductility compensates for the brittle heat-affected area in the base metal.

CORROSION

(.11.21

- (N) Lips of electrode exil
- (B) Lee per weld deport
- 10 Min "marked core in a
- illal proper Courses

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- t A) Bus type of the top of the state of the
- (B) Smiled in the control of the con
- (C) Departure program the sold than you do be a ready program to the On standard that the expedition between the bree metal.
- (D) When welder 18.8 ansteath stainless steel, be sure the relief of the steel and welding produce is correct so that welding does not cause carbide precipitations. This condition can be corrected by an nealing at 1900-2100-1
- (E) Certain materials such as aluminum require careful cleaning of all slag to prevent corrosion

IRREGULAR WELD QUALITY

- (.A) Improper electrode man ipulation.
- (B) Excessive welding our rent.
- (C) Welding in improper position for which electrode is designed.
- trode is designed.
 (D) Improper joint design.
- (A) Use a uniform weave or rate of travel at all times
- (B) Do not use excessive welding currents
- (C) Use an electrode designed for the type of weld and the position in which the weld is to be made
- (D) Prepare all joints properly

MAGNETIC ARC BLOW

- (A) Magnetic fields cause the arc to blow away from the point at which it is directed. Magnetic blow is particularly noticeable with dec at ends of joints and in corners.
- (A) Proper location of the ground on the work. Placing the ground in the direction the arc blows from the point of welding is often helpful.
- (B) Separating the ground in two or more parts is helpful.
- (C) Weld toward the direction the arc blows.
- (D) Hold a short arc.
- (E) Change magnetic path around arc by using steel blocks
- (F) Use are welding.











Pacific Shipping News

By Special Correspondents



Mrs. Boettiger and Capt. D'Hooge are pictured displaying the Army Guidon awarded to the guard force of Western Gear Works, Seattle

First Army Guidon Award

Western Gear Works, Seattle, are very proud of the award recently received by their Auxiliary Military Police Unit from the Army and Navy authorities, which entitles them to fly the Auxiliary Military Police Guidon. This A.M.P. unit devotes its entire time and attention to the job of providing necessary protection at the facility it is employed to guard.

All of its members are trained at the Northern Security District Pohec School in Seattle, which they attended on their own time. They are charged by the War Department to "ward off danger or threat of danger of any kind and from any source."

In their basic training course, this unit made an average grade of 91 per cent out of a possible 100 per cent. The award of the guidon is made "for outstanding efficiency, training, and appearance."

This was the first award of this nature in the United States. As Mrs. Anna Roosevelt Boettiger remarked when she passed the bunting to Charles J. D'Hooghe, Captain of the Guard, "The right to display this guidon is the highest honor to which the A.M.P. Guard force may attain."

Concrete Barges

Operation of concrete ship-shaped oil tank barges (of which six built by Concrete Ship Constructors at National City, California, are now in service) is being studied with great interest by American oil tanker operators. The record so far is unusually good. Some of these barges have delivered several cargoes without a single report of any major or minor failure in the vessel, her equipment, or her machinery. One barge, loaded considerably deeper than her designed capacity, making a voyage to a point far out in the Pacific through very severe gales, proved

herself to be seaworthy in every respect, and delivered her cargo in good order.

It is thought that for certain specific trades in oil transport, the low maintenance costs of concrete vessels might prove very attractive.

Albacore Reappear

The fishermen of Southern California are again reaping a golden harvest close along the shore. Albacore, which practically disappeared from those waters some twenty years ago, began to return in the early summer of 1942. With the price \$325 a ton at the cannery, small "jig boat" fishermen, three in a boat, are bringing in a ton a day. Much speculation goes on as to what brings the fish back. Many fishermen think it's depth charges in the far Pacific driving the life of the sea eastward to the California coast. Oujen sabe?

Boat Builders Alarmed

Puget Sound, early in July, was declared a critical man power area, and the Boeing Aircraft Company was in great need of 4000 additional workers. For these reasons, the Federal Government declared that no contracts would be awarded to new yards that might be started, and in recent contracts for 1500 boats of various classes only four came to Puget Sound

A general meeting of Puget Sound boat builders was held at Seattle on July 12 to get united action on this crisis. Wires and letters were dispatched to Washington with evidence to show that curtailing the boat industry would be of practically no benefit to the Boeing problems. Plans were formulated so that the boat-building industry on the sound can in future act as a unit in defeating adverse legislation.

Salmon and Halibut

The color of stin OPA ha deliver a half a call school of the state grant all atten-1. de total price colleng went to fleet, 140,000 lbs of trish silp it was handled through the Esherman's Cooperative Exchange of Scittle, and sold at auction to the Talkest midder. The next day, under , sling price regulation, that exchange distributed 7000 lbs of sal-... to dealers on a pro rata division rised on former use. The exchange manager declares that the fishermen cunnot operate their boats under the ceiling price imposed.

The ceiling price is 16 to 1712 cents a pound for balibut and 14 to 22 cents for salmon

Pioneer Passes

Captain James Griffith, pioneer shipowner and operator, who took i leading part in ocean trade development in the Pacific Northwest, died at his home in Seattle on June 29. None of his immediate family survive His two sons, Stanley A. and Albert V. Griffith, died on January 13, 1943, and in 1933, respectively. Their ashes, together with those of their father, were strewn on the waters of Puget Sound.

Captain Griffiths was a great yachting enthusiast He was honorary life commodore of the Seattle Yacht Club, and served as commodore of the Pacific Coast Yachting Association and of the Pacific International Yachting Association.

The Agar Industry

Recently in San Diego, the type of seaweed known as gelidium eartilagoneum (kelp) is receiving much attention. Several new and enlarged plants for its reduction have sprung up almost over night. The world's largest beds of this weed are located along the Southern California coast from Catalina Island south. The commercial product, known as agar, is made from this weed and until Pearl Harbor the chief source of this material was Japan. We exported from Japan some 600,000 lbs. annually.

Agar has many uses. Among these

or MAV presenth average and a second of the second of the

When the Japanese supply was cut off WPB immediately froze all stocks of egar and confined its use exclusively to bacteriological work.

Much development work has been done in the laboratories and the reduction plants of Southern Cahfor ma on the harvesting of the weed and on the extraction of agar crystals therefrom. This work has been thrown into high gear by the war, and the agar chemists of America have developed a cheaper and quicker method, resulting in a more uniform product.

So now the Walsh Kelp Laboratories, the Kelco Corporation, and a new firm, the American Agar and Chemical Company, are all expanding rapidly.

Kaiser Puts Three Over

On Tuesday, July 20, in the Portland, Oregon, area, each of the three plants operated by the Kaiser interests launched a big ship. At Vancouver, Washington, the big yard launched an escort aircraft carrier, which was christened Natoma Bay by Lady Halifax, wife of the British ambassador to the United States. At Swan Island yard, a big tanker was launched and christened Lundys Lane by Mrs. George E. Clinton.

At Oregon Shipbuilding Corporation, a launching is just another Liberty ship. The hull launched on the 20th of July was named John D. Ross (after Seattle's late great advocate of public ownership of power), and was christened by his widow.

An Itinerant Trouble Shooter

The Enterprise Engine and Foundry Company of San Francisco has been checking up on the travels of its Joseph O'Leary, a genial "Swede,"



Joe O'Leary, installation engineer, Enterprise Engine and Foundry Co.

who has been eating and sleeping with Enterprise diesels since 1919, and who has installed these economical prime movers all over the map. He knows the internal combustion engine thoroughly, and has yet to meet an installation that has him stumped.

He has installed Enterprise power to provide: lighting for Petersburgh, Alaska; light and auxiliary power for ships building in Beaumont, Texas, and New Orleans, La.; light and heat and power for the world's greatest observatory, Mt. Palomar, Calif.; propulsion power for fishing boats, tugs, and Army and Navy auxiliary craft building north, south, east and west.

In his spare time he "tinkers with diesels."

A Notable

Marine Exhibit

The Marine Exhibit of the San Francisco Museum of Science and Industry, temporarily housed at the California Palace of the Legion of Honor, has lent a collection of ship models to the United States Maritime Service, 1000 Geary Street. The models include ship Balclutha (later Star of Alaska), lent by Alaska Packers Association, and owned by A. K. Tichenor: American President Line steamer President Taft; U. S. Frigate Constellation, gift of John A. Kruttschnitt; Kronprinzessin Cecile



This all-welded steel 170-ton barge, one of a number ordered by the Navy from the Pacific Gar & Forndry Company, was launched into Lake Union. Steel for the barge was fabricated at the Renton plant of the company and taken to the Lake Union plant, where it was assembled. Originally the company built Navy barges at its Renton plant and employed a hoise-mover to take them six blocks through the city of Renton to Lake Washington, where they were launched.

(renamed Mt. Vernon), donated by H. W. Lewis; M.S. California, designed and built by K. Wulffschmidt; S.S. California, lent by General Steamship Corporation; U. S. Shipping Board cargo steamer Lorain, built by American Shipbuilding Company and sailing ship Zeemeeuw.

The marine exhibition, as the first unit of the museum, had its beginning at the 1940 Exposition on Treasure Island, when a group of San Franciscans sponsored a display of ship models there. Such marked interest was aroused that it was determined to expand the exhibit and make it permanent. It was moved to the Merchants Exchange Building and later was located at Aquatic Park Center.

The museum is headed by Mrs. Alma Spreckels Awl as honorary chairman. Officers and directors include: Walter J. Walsh, chairman of the board; Campbell McGregor, president; Frank J. Edoff, chairman of executive committee, and directors William Cavalier, H. D. Collter, Frank Evers, L. M. Giannini, George Randolph Hearst, Henry J. Kaiser, Joseph R. Knowland, Roger D. Lapham, Felix S. McGinnis, Joseph A. Moore, Jr., Mrs. George A. Pope, John N. Rosekraus, William P. Roth and Frank Rice Short.

Pacific Trade Notes

Bushnell Controls and Equipment Co. of Los Angeles and San Francisco have recently been appointed representatives of the Cochrane Corporation, Philadelphia, for the direct sale of Cochrane Flow Meters in California, Western Nevada and Arizona. B. O. Bushnell is head of the concern and in active charge of the Los Angeles office. L. T. Slauson is in charge of the San Francisco office. C. C. Moore & Co. Engineers, Inc., Pacific Coast representatives for Cochrane Corporation. continue to handle all Cochrane products, including Flow Meters, in Oregon, Washington, British Columbia, Alaska; and all Cochrane products, excepting Flow Meters, in California, Nevada and Arizona.

C. T. Hansen & Company, for twelve years representative in Detroit, Mich., of Lukens Steel Company, has been appointed Pacific Coast sales representative of Lukens and subsidiaries, By-Products Steel Corporation and Lukenweld, Inc., Coatesville, Pa.

Offices have been opened by the Hansen company in Los Angeles, San Francisco and Seattle, with C. T. Hansen, president, who has established residence in San Francisco, in personal charge.

A Busy Shipyard

The covered wavs of the Commercial Iron Works at Portland, Oregon, are very busy these days turning out Navy auxiliaries in record time. On July 17 they launched a large Navy tug of the A.T. 94 Class, which was christened U.S.S. Zuma

by Mrs. W. G. Jones, wife of Lt.-Comm. Jones, USN, executive officer to the Port Director of Seattle.

Immediately following this launching, keel plates were laid for a P. C. sub-chaser, which will be ready for launching in less than 20 days.

Richmond "Pre-Fab" Technique

(Continued from page 64)

work under the most advantageous conditions for fast production.

- (2) Equipment and materials are under far better control for both storekeeper and installation gangs.
- (3) Less latent heat strain is locked into the superstructure.
- (4) Less time is wasted in procuring tools, securing proper craftsmen for any job, waiting for orders, or waiting for cranes.
- (5) The final product is a better job of shipfitting, welding and installation.

The combined Richmond No. 1 and Richmond No. 2 yard, which is served by "Pre-Fab," is now well up among the largest ship assembly plants in the United States. It is now turning out Liberty EC-2 steamers at the rate of twenty or more a month, or at least one every 36 hours. This delivery schedule, of course, sets the pace for "Pre-Fab" shop, which must deliver a complete deck house at least once for every day and a half elapsed time. Since it is working on six deck houses simultaneously, the speed of the assembly lines must be such as will take the individual deck house through the shops in somewhat less than nine days. As a matter of fact, there must be considerable time allowance for adjustments, maintenance and deliveries, so that it is quite usual to put the deck houses through in less than a week.

"Pre-Fab" has been adopted by Richmond shipbuilders as a designation for this deck house shop and process, and it is a very good short name for general use, although not exactly descriptive. The process, as differentiated from the ordinary methods for hull superstructures, is in fact a pre-assembly and pre-equipment technique.



First Birthday — Bay Area Maritime Committee

Out of the welter and waste of the war some good may come. It cannot be measured in dollars and cents. Money cannot buy it.

Only two summers ago, anyone seeing, for instance, young men at summer resort spots jitterbugging and drinking, indifferent, selfish, aimless, would have reason to wonder if they were good for anything. Compared with today there is a difference. The gain will not be erased for years to come.

It applies to older men too. Wrenched from his job where the outlook was hopeless, a waiter finds he can learn a trade.

The change has affected women perhaps more than men. Every housewife not only knows something about the need for foreign trade and ships, she realizes perhaps for the first time the importance of her individual effort in the national scheme of things.

The change is seen on our Pacific Coast, in its transition from an agricultural to an industrial area.

It is seen in the San Francisco Bay area. There is no gainsaying what is a fact the war has brought the communities of this area closer together. The Army, the Navy, the agencies of the Federal Government disregard our county lines, our petty jealousies. To them this is the Bay area

The Bay area has grown up. It must now think and act like an adult,

and that is why the rising generation of younger businessmen through their junior chambers of commerce, and aided by the Marine Exchange, sponsored the Bay Area Maritime Committee on Harbor Day one year ago.

Don Fazackerley, an aggressive, personable young businessman representing the San Francisco Junior Chamber of Commerce, is chairman of the committee. In his announce ment of the next and anniversary meeting on Harbor Day, August 23, he said. "Perhaps on this occasion we may all be able to say truthfully, 'We have progressed together.' "Secretary of the committee is M. A. Cremer, manager of the Marine Exchange.

The Committee's Membership

The committee is made up of four representatives from each of the eleven counties in the area. They were selected by the junior chambers of commerce. Those chosen are for the most part mature businessmen and senior chamber of commerce officers, who, because of the position they hold in their respective communities, can be said to be genuinely representative of the interests of their respective counties.

The representation includes such men as Charles W. Deterding, manager of Sacramento County: Peter Howard of Oakland's Howard Terminal: Matthew A. Graham of the People's Finance Company of San Ratael and a director of the Golden Gate Bridge and Highway District. Andrew A Morain manager of the Port of Redwood City Iona M Booth, executive secretary of the Contra Costa County Development Association. Henry Ohm June for of the Port of Stockton, Marshall Wallace, county surveyor for Sonoma County; and Harold J. Boyd, San Francisco controller.

The committee has no officers other than a chairman and a sectotary. There are no dues not seem ments

Committee Meetings

The committee meets the third Tuesday of each month. All meet ings are luncheon meetings, followed by a brief ten or fifteen minute talk by an expert on a subject of common interest. Meetings are called to order after lunch, promptly at 12:50 p.m., and adjourn at 1:45 p.m.

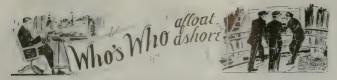
Most activities are carried on be tween the monthly meetings by small subcommittees. In these in term activities, junior chamber of commerce members perform most of the so-called "leg work."

While the monthly meetings are, at the members' request, and for their convenience, held at the Commercial Club in San Francisco, the policy is to meet in other sections of the area. Meetings have been held in Oakland, Redwood City and Sac ramento. The meeting in Sacra mento was held while the State Leg islature was in session. A large number of the senators and assemblymen representing the area at tended.

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Don Fazackerley, chairman, Bay Area Maritime Committee.



Edited by Jerry Scanlon

Admiral Emory S. Land, Chairman of the United States Maritime Commission, has issued a warning to all operators and crews against any disclosures of how the defeat of the Axis submarine menace largely has been accomplished. Admiral Land pointed out that such information would provide the Japanese with valuable knowledge for use against our win submarines in Pacific waters.

Marshall E. Dimock, Assistant Deputy Administrator of the War Shipping Administration, charged with the Recruitment and Manning Division, said that through the efforts of the Maritime unions 6500 experienced merchant marine seamen of all categories have been drawn back to the merchant marine from non-maritime occupations during the past year.

John E. Cushing, chief on the West Coast for the War Shipping Administration, announces that reemployment rights for merchant seamen who leave civilian life to serve in the American merchant marine are now established by law. This protection for seamen is contained in provisions of an act of Congress (H. R. 131), and has been just signed by the President.

Mr. Cushing pointed out that by assuring economic protection during the post-war period for men who have volunteered their services in the merchant marine, the legislation eliminates one of the main obstacles to recruitment for man power for our fast growing merchant fleet.

Designed to acquaint the merchant seamen with pertinent information concerning the country, ustems and habits of the people, and other data, when they are ashore it. Foreign ports, the United Seamen's Service is distributing a small volume with the title "Shore Convoy for Merchant Seamen."

Officers of off-shore vessels who visit Columbia River ports will be interested to learn that the veteran river freighting firm of Babbidge & Holt, Inc., has been purchased by the Shaver Forwarding Company, Portland, Ore. The purchase was made known by Lew S. Russell, vice president and manager of the Shaver Forwarding Co. George A. Dennis, who has been secretary-treasurer of Babbidge & Holt, will continue as manager, but Fred Holt, president, plans to retire.

Larry J. Hoffman, formerly Northwest manager for Swayne & Hoyt, with offices in Seattle, is now on duty as a major in an English port, Pacific Coast friends learned in a message from the popular steamship executive. He joined the Army Transport Service a year ago.

Ray H. Tibbits, connected until the assault on Pearl Harbor with the Mitsubishi Company, is assistant administrative officer under John E. Cushing in the War Shipping Administration offices in San Francisco.

The memory of the late John H. Rossetter, one-time vice president of W. R. Grace & Company and president of the Sperry Flour Company, is perpetuated with the recent naming of one of the Liberty ships built at Richmond Shipbuilding in his honor.

Mr. Rossetter was head of the operating division of the Emergency Fleet Corporation of the United States Shipping Board during World War I, and for a decade was considered America's outstanding shipping leader.

Douglas D. McKay, for years representative in the Far East for the old Dollar Line, and serving the American President Lines in the same capacity until the Japs struck Pearl Harbor, is now in Seattle with his wife and child.

Since 1930 and until December 7, 1941, he had ben in China, and later went to Singapore, where he remained until that place was invaded by the Nipponese. Later he joined the U. S. Maritime Commission and served in New Delhi for the WSA.

The Pacific Coast shipping world learned with regret of the death in New York of William Pratt Hamp, manager of the Kerr Silver Lines. He was 53.

He was born in Cardiff, Wales, coming to this country twenty years ago to represent the Stanley & John Thompson Company, managing owners of the Kerr Silver Line Steamship Co. He had acted as operating manager since 1926 in New York, and was a veteran of World War I. His widow, and a son, Eric. survive.

The National Maritime Union has notified its Pacific Coast representatives that a wage increase of \$25 per month and a sea-risk war bonus of \$250 a month will be sought in forthcoming negotiations.

The war bonus would apply to those serving on merchant ships carrying war cargoes.

K. H. Donavin, Pacific Coast manager of Moore-McCormack Lines, reports that steamship companies already have plans calling for first-class 24-knot Latin American service liners.

Death of Chauncey Goodrich Parker, former general counsel for the United States Shipping Board, and well known for his many legal battles with private steamship operators after World War No. 1, occurred on July 11.

A. Emory Wishon, vice president of the Pacific Gas & Electric Company, has been added to the directorate of the American President Lines. This is the second director ment d within a month by Henry F Gredy, president of the APL. Frank O'Connor, head of the Donovan Lumber Co, was recently elected to the board.

Good news to the shipping world was the announcement by A. W. Robertson, chairman of the Westing house Fleetric & Manufacturing Company, that Charles A. Dostel, Pacific Coast district manager, one of the most popular executives on the West Coast, had been elevated to vice president

Mr. Dostel has been district man ager here since 1939, handling the sales activities in nine Western states, Alaska and Hawan.

Confirmation by the Maritime Commission that it would deliberate firm bids for the purchase of the American President Lines has caused a stir in American shipping.

Henry F. Kaiser, potent world shipbuilder, and W. H. Bechtel, head of California Shipbuilding, were two leaders in American industry reported to be among prospective bidders.

Matson Navigation Company, Dollar interests, represented by R. Stanley Dollar, the United States Lines, Moore-McCormack and the American-Hawaiian, are also interested in the sale.

That President Grady of the President Lines might head a group of shipping leaders and make a determined bid to purchase all outstanding stock is a strong probability.

D. Stewart Iglehart, president of W. R. Grace & Co., announces that the Grace Line will enter the next peace era with at least 50 per cent more tonnage than it had the day of the Pearl Harbor bombing. He revealed that the company has or is building 14 fast geared-turbine cargo ships of the Maritime Commission's advanced C-2 design.

This war has brought back many veterans who, previously to Pearl Harbor, had said farewell to the sea.

Word from Seattle tells of the re-

turn of Captain F. H. Hardy. He to tured in April, 1941, from the office in charge of the South district of the U.S. Coast & Geodetic Survey. He is doing specialty work.

His triends recall that during World War I Capt Hardy served as an obser absord the naval transport Mattha Washington, running be tween New York and France

Friends afloat and ashore will be sorry to hear of the passing early in July of Captain Frank M. Swett, peopular Astoria, Ore., harbor master and senior naval inspector of the Astoria Marine Construction Co. Uremic poisoning contributed to his death. He was stricken while on a trial run aboard a vessel on the Columbia River.

A thrilling letter has been received by friends in San Pedro, California, from Chief Engineer H. L. Klinefelder, well known in Pacific Coast marine circles, who told of his Liberty ship's being attacked during a convoy by a German undersea boat, but escaping unscathed. Chief Klinefelder's letter was a tribute to the construction of Liberty ships. "Give me a Liberty ship and I won't be atraid to sail any occur." I know my chances of returning sitely home will be greater than just the average," he stated

John A. Mahoney, long located in Scattle for the Coastwise Line, opened a San Francisco office for the same company on August 1. He is widely known in Pacific Coast marine circles.

George Cronk, second assistant on gineer, now wears the Distinguished Service Medal, highest decoration of the merchant marine, for his heroism under enemy action in the Atlantic.

Captain Edward F. Macauley, deputy administrator of War Shipping Administration, made the presentation upon presidential orders at the official dedication of the U. S. Maritime Service Officers' School in Alameda on July 4.

He was on board a cargo ship when it was torpedoed. His action in rescuing several shipmates won for him the coveted decoration.

Second Engineer George Cronk is shown receiving the Distinguished Merchant Marine Service Medal. In the photo are Capt. Edward F. Macauley, Comm. A. G. Ford, Mr. Cronk and Teffair Knight.



Richard C. Hughes, nephew of R. C. (Ray). Jones, port engineer for the General Petroleum Corporation, Wilmington, has won his wings with the rank of lieutenant, flying a P-38. He is also a nephew of Allan McCullough. United States Maritime inspector at Richmond Shipbuilding Corp., former chief engineer with the Rich field Oil Company and a grandson of the late Allan McCullough, veteran chief engineer and a charter member of the old MEBA.

Lieutenant Hughes was a member of the San Francisco Examiner editorial staff before he enlisted in January, 1942.

George Williams, assistant operating manager for the Grace Line, is back on the job after undergoing a serious operation.

Fellow officers of Commander Ralph Sheaf, in charge of the U. S. Maritime Training School at San Mateo, tendered the popular naval official and his wife an informal reception on the occasion of their thirteenth wedding anniversary on July 25

Commander Sheaf was attached to various steamships before entering the naval service. Mrs. Sheaf is the daughter of Mrs. J. O. Schutzer, pioneer San Francisco resident.

Leonard C. Hammond, head of the Hammond Lumber Company and operator of steamers in this trade, was elected to the board of directors of the American Trust Company. He is the son of the late A. B. Hammond, founder of the lumber firm. His father was also an associate of the late C. P. Huntington and E. H. Harriman in many enterprises.

The death of Lendal G. Gray, founder of the L. G. Gray Steamship Company, caused a shock among his many hundreds of friends. Mr. Gray, who was 43, passed away on July 7. He had been sick for several weeks but was believed on the road to recovery when the end came. He was at one time in the service of W. R. Graze & Co. Mr. Gray is survived by his widow, Gertrude; two sons, Lendal, Jr., and Morton; and a daughter. Elin Gray

News of the death of Charles W. Salters, assistant collector of customs

at the Port of Los Angeles, on June 17, was received with deep regret by lus associates in the Government service as well as the maritime industry up and down the Pacific Coast. He had been in the custom's service since 1900, and was one of the best-known executives on the West Coast. He was 55 years of age.

With the lull of summer, in so far as social activities are concerned, behind them, the Pacific Coast Propeller Club ports are arranging for some of their most interesting events.

The leadership of Max G. Linder. who was named prexy of the Propeller Club, Port of Los Angeles, on June 30, augurs well for the Southern unit. He is president of the Transmarine Navigation Company, Second to him is Lee K. Vermile, an attorney. not too well known to the marine fraternity in San Francisco, but the rest of the elected officers, such as Dan Dobler, superintendent Pacific Coast Division, Marine Department, Texas Company, as second vice president; James G. Craig, treasurer of the Craig Shipbuilding Co., third vice president; and Hugh Middleton, district manager for the De La Rama Steamship Company as secretary-treasurer. are well known and will engender plenty of action in the Southern port.

The six new members of the board of governors elected were Eloi J. Amar, port manager Long Beach Harbor Department: Leo E. Archer, manager Moore-McCormack Lines: Ralph J. Chandler, Southern California manager for Matson Navigation Co.; W. Kenneth Pope, vice president and southwest manager for Pope & Talbot; Harold A. Black, attorney: and Herbert E. Pickering, partner, W. H. Wickersham & Co.

Book Review

Allied's Radio Data Handbook, edited by Lieut. Nelson M. Cooke, United States Navy, U. S. Naval Research Laboratory, Washington, D. C. Published by Allied Radio Corporation, Chicago. Forty-eight pages, six by nine inches. Price, 25c postpaid.

A comprehensive, condensed handbook of formulas, charts and data most commonly used in the field of radio and electronics, with all subjects clearly presented, conveniently arranged and cross-indexed for ready

Divided into four parts: Mathematical Data, Radio and Electronic Formulas, Engineering and Servicing Information, and a complete set of four-place Log and Trig Tables.

Formulas are given for Decibels, Resistance, Capacitance, Inductance, Reactance, Resonance, Frequency, "Q" Factor, Impedance, Conductance, Susceptance, Admittance, Transients, Peak Average and R.M.S. Voltage and Current Values, Meter Shunts and Multipliers, and Vacuum Tube Constants

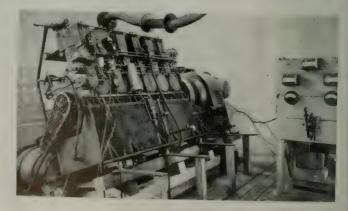
AN INTERESTING DIESEL TEST

Our illustration shows a Navy tilting test required of diesel engines for use on Navy floating drydocks. The unit under test is a heavy duty 71/4" bore, 9" stroke, 6 cylinder Lorimer diesel direct connected to a 100 km General Electric direct current generator. The unit operates 720 rpm at full load.

The test calls for full load operation at following inclinations:

One hour at 20° to port; One hour at 20° to starboard; One hour at 7° down by the head; and One hour at 7° down by the stern.

These tests simulate conditions likely to be met at sea. The diesel is passing such tests easily at the Oakland (California) works of the Lorimer Diesel Engine Company.



Women Invade the Caulking Craft

In the heetic scramble for man or woman power for shippards, we are training all the necessity crafts and meking craftsmen of all types almost overnight. We had thought, how ever, that the ancient craft of caulking wooden ships was sate from the universal encroachment of women, but here they are at the Hoboken plant of the Todd Shippards Corporation, being taught to spin oakum and learning on a wooden built-up jig the use of the "caulking iron," the "mallet," the "beetle" and the "housing iron."

As we looked at these pictures, our memory flashed back 50 years to what was then an old institution in San Francisco, the "Caulkers' Bench." On this bench, in front of an old saloon in "Tar Flat," sat the eaulkers who were not busy working, their helpers (boys) romping within call. The caulkers sat in the order of their time off work. Any shipbuilder wanting caulkers had to take those who had been idle for the longest period.

The union caulkers, in those days, worked on a piece scale instituted by themselves, and did a certain length of seam a day. On straight deck work, this length would be finished in five or six hours: on bottom work and bilge curves it might take ten or more hours. When his stint for the day was done, the caulker and his helper gathered up their tools and went home.

There are many tricks of the trade in caulking that can be learned only through long experience, and we remember that most of the occupants of the "bench" were old men who had their own individual slants on the trade secrets. We also remember some of the results of the work of the hastily-trained caulkers who attempted to make watertight seams on the wooden ships of World War I.

It looks easy to hammer oakum into a crack between boards and pay that oakum with pitch, but the acid test comes when that calked seam is weaving and groaning under the strain of strong gales and battering seas, in arctic cold or tropic heat.



Above: It's all in the twist of the wrist, these students of ship caulking learn as they begin to work at a trade which heretofore has known only men. Left to right they are Miss Ann Tufankjian, Mrs. Emma Consalvo and Mrs. Catherine Young. They are learning their trade at the Todd Shipyards Corporation's repair yard at Hoboken, N. J.

Below: Caulking the seams of a wooden ship's hull is quite a different process from caulking deck seams. Here are shown two of the first three women to take up the ancient trade in American shipyards. They are Mrs. Consolvo and Miss Tufankijan, practicing on a ija at the ship repair yard. Mrs. Consolvo is holding the "housing iron" in position, while Miss Tufankijan swings the "beetle" to drive home the oakum in the seams. Instructor Anthony Faicila looks on.



On the Ways - SHIPS IN THE MAKING

This sketch of the proposed "Victory" steamer was released by the Maritime Commission on July 25, together with the characteristics below.

(Photo courtesy U.S. Maritime Commission)



PROPOSED VICTORY SHIP

Greatest advantage of the Victory ship over the Liberty will be increased speed. The Liberty has a speed of a little more than 11 knots, while the Victory is designed for 15 knots or more, for faster convoys and to challenge the U-boat menace.

The new ship will not be an overall welding job, but will be riveted in certain parts of the main structure.

The general specifications of the Victory ship compared with the Liberty ship are as follows:

	Victory	Liberty
Length	455 feet	441 feet, 6 inches
Beam	62 feet	· 57 feet
Deadweight tonnage	10,800	10,800
Cargo tonnage	9146	9146
Engine horsepower	6000 or more	2500
Propulsion power	Steam turbine-gear	Steam reciprocating
Decks	3	2
Speed	15 knots +	11 knots

Calship Fourth of July Launching

Calship celebrated July 4 by laying the keel for the first of fifty Liberty tankers to be constructed by the Bechtel-McCone yard. Soon after the S. S. Jacob A. Riis slid down the ways, giant gantry cranes swung over the shipways and gently lowered the huge keel into place. The job was completed shortly after midnight.

No fanfare or ceremony marked the occasion. To the workmen it was merely another keel-laying, but to an oil-hungry nation it meant considerably more, as the new tankers will help alleviate the gasoline shortage.

The prime virtue of the Liberty tanker is that it is adapted to mass production, thus getting into service quickly a far greater tonnage than would be possible in the usual type of tankers.

The new-type tanker will have a capacity of 65,000 barrels, and is a modification of the famous Liberty ships, in the construction of which Calship is leading the nation with 218 launched to date.

A Large Order from the Maritime Commission

Consolidated Steel Corporation, Ltd., has received an order from the Maritime Commission calling for the construction of thirty-two S4, SE2, PD1 combat loaded troopships, it was announced just as we went to press.

Four Ships Launched by Bethlehem Shipyards Over One Week-End

Setting the pace for East Coast shepwards in ship construction for me week four great new ships, with an eggregate formage of 41,000, were launched from Bethlehem Shipyards swar the week end of July 23

At the Bethlehem-Fairfield Ship yard, Baltimore, Md., three Liberty ships were sent down the ways, and across the Patapseo River at the Sparrows Point shipyard a high-speed freighter with a cargo capacity of 10,000 tons took to the water. The launchings at Bethlehem Fair field brought the total number of Liberty ships launched from the yard up to 172.

The first of the three Liberty ships, the Louis Marshall, 170th vessel of its type to be built at the yard, went down the ways on July 23. She was named for the prominent lawyer and founder of the Jewish Protectory and Aid Society of New York State.

On July 24 the yard launched the Townsend Harris, 171st Liberty ship to be built there.

Earlier in the day, at the Sparrows Point Shipyard, the Exchequer, the fourth of ten fleet eargo ships of this type to be built by this yard, went down the ways. Built for the Maritime Commission for operation by the American Export Lines, the vessel was sponsored by Miss Patricia Mary McCormack, 16-year-old daughter of Frank L. McCormack, assistant to the Marine Superintendent of the American Export Lines, New York City. The keel for the vessel was laid on February 18 of this year.

The Thomas U. Walter, 172nd Liberty ship constructed at Bethlehem-Fairfield, was launched on July 25.

Marinship Launches S. S. Jack London

Marinship launched its 15th Liberty ship, the S. S. Jack London, on Friday evening, July 16, at 8:30 p.m.

An in-yard drawing was held among the 16,500 workers for a sponsor, and Mrs. Ann Pendleton Doud, a most attractive young welder, was finally selected to christen this last Liberty ship to be completed in the Sausalito shipyard. From now on, work will be exclusively devoted to the construction of the big

MARINSHIP LAUNCHINGS





Top: The July 16 launching of the Liberty ship Jack London at Marinship. Left to right: Gunnar Hagg: Mrs. Emily Dahmer (Swing Shift welder and member of the committee to select the sponsor); Carroll V. Johnson; Mrs. Johnson (face covered); Mrs. Charmion London; Raymond F. Dahmer; Corporal Giles Doud, U.S.A.; and Mrs. Ann Pendleton Doud.

Center: Marinship's 14th Liberty ship, Henry Durant, being towed to the Outfitting Dock after her June launching. She was named for the first president of the University of California.

Bottom: S.S. Ponaganset, Marinship's 7th tanker, was launched on July 10. Lined up are detachments of sailors and WAVES.

(Photos courtesy of Marmship

tankers, seven of which have already been launched and the first nine selected by the U. S. Navy to be fleet oilers. Marinship was origially given a contract for 34 Liberty ships, but last July this order was reduced to 15 when the U. S. Maritime Commission selected this yard as one of the two on the Coast to build the huge T-2 tankers.



The U.S.S. Knoxville, third new type frigate to be launched on the **Great Lakes**, slides down the ways of the Leathem D. Smith Shipbuilding company, builders, into Sturgeon Bay.

Launching of U. S. S. Knoxville

With a mighty splash that rolled back the narrow waters in the slip as it sped down the shipways, the U. S. S. Knoxville, first of a fleet of eight modern frigates, was launched on Saturday, July 10, at the Leathem D. Smith Shipbuilding Company yards at Sturgeon Bay. Wisconsin.

at Sturgeon Bay, Wisconsin.

Launching of the new-type escort vessel was the high light of a combined ceremony during which the shipbuilding firm and its 4300 employees were awarded the United States Maritime Commission "M" for their record production of coastal cargo vessels. The firm recently completed its first contract with the Commission, which called for the construction of nine 265-foot coastal cargo vessels. The ships were built for operation by the British Government under the lend-lease act.

Mrs. Gus Johnson of Knoxville, Tennessee, christened the 317-foot frigate, and as the ship slowly began to move sideways into the slip, the Smith Employees' band of 30 members played the national anthem.

A crowd of employees, public spectators, officials of the Maritime Commission, and civic leaders, estimated at over 5000, witnessed the launching.

The Knoxville was the third frigate to be launched on the Great Lakes, and her hull was 80 per cent completed when she entered the water, company officials stated. Attached to the bow of the ship was a huge replica of the Maritime Commission's award of merit. This plaque, seven

and one-half feet high and five and one-half feet wide, will adorn each of the remaining seven sister ships as they are launched in the near future.

In addition to the Knoxville, the firm has three more frigates already under construction on its ways, and as soon as the Knoxville was safely towed to the fitting-out berth, workmen began clearing away the dock for the keel-laying of still another frigate.

The modern-day frigates are 317 feet in length, with a beam of $37\frac{1}{2}$

feet, slightly larger than the British and Canadian corvettes, and somewhat smaller than American gunboats. They are propelled by reciprocating steam engines.

The first American frigates were built during the John Paul Jones era and were used to intercept surface raiders of the Barbary pirates, and now that historic name has been given to this new type of twin-screw escort vessel.

Following the launching, the other colorful ceremony took place in which high-ranking Maritime Commission and Navy officials and civic leaders participated as the firm and its employees received the Commission's "M" pennant.

Consolidated Launches Frigate

Seventh frigate to be launched from Consolidated Steel Corporation's Wilmington shipyard, the U. S. S. Eugene slid into Los Angeles Harbor on July 6.

Named for Eugene, Oregon, the ship was sponsored by a resident of that northern city, Mrs. Frank Durbin Cross, who is temporarily living in Long Beach.

Designed primarily for convoy duty, the frigate of this type is an escort vessel similar to the Canadian-British corvette but altered to meet the requirements of the United States Navy. Consolidated's Wilmington shipbuilding leads in production among the nine yards in the United States building this type of escort vessel.

June 30 at the Pascagoula, Mississippi, shipyard of the Ingalls Shipbuilding Corporation. The vessel is an all-welded new type of U. S. Navy transport and was christened U.S.S. Osage by Mrs. Joseph Anthony McHenry, wife of Comm. McHenry of the Bureau of Ships, Washington, D. C.

(Official U. S. Navy photograph courtesy of the Ingalls Shipbuilding Corp.)





Northwest Shipyards

The Sea Bell Shipbuilding Company, with plant on the Duwamish Waterway, Seattle, launched the 180 foot non-propelled cargo ship Douglas Fir II on July 17º the second vessel of five of her size and type ordered by the United States Maritime Commission.

The Northwestern Shipbuilding Company of Bellingham, which was awarded contracts for four rescue tugs by the Navy, launched the second vessel of the quartet on July 18. The first of the rescue tugs was launched recently.

The Martinac Shipbuilding Corporation of Tacoma launched the YMS-

Torpedo-Boat Tender Launched

Lake Washington Shipyards of Houghton, Wash, on July 10 launched the U.S.5 Wachaprague, a mother ship for torpedo-boats. The vessel is named for an inlet on the coast of Virginia, and is the first of her type to be launched from a Puget Sound yard.

278 a wooden minesweeper, on July 17 Vivin Lanette Young, 17 years old, daughter of the chief guard at the Martinac plant, was the sponsor

The Seattle vard of the Seattle Tacoma Shipbuilding Corporation on July 5 launched the seventeenth of the fleet of American destrowers or dered from this plant by the Navy. The vessel was christened the Morrison by Miss Margaret Marie Morrison of Rutherford, N. J., daughter of the Cavil War naval hero whose name the new warship will bear John G. Morrison, a coxswain in the Union navy

The launching was part of Seattle's Fourth of July celebration. The yard was awarded a contract for 25 destroyers. The first, the Carmick, was launched on March 8, 1942 Since that time launchings of the fighting ships have averaged one a month.

Contracts for 12 vessels, including six 280-foot barges with a carrying capacity of 4,000 tons each, awarded by the Maritume Commission, and six 148-foot freight and passenger vessels ordered by the Army, are held by Anacortes Shipways, Inc. The first barge, given the name of West-

orn Larch, is described as the largest wooden vessel built in an American shippard since the First World War She was launched on July 5

The work of moving the pupment and buildings of Plant No. 2 of Barbee Marine Yards, Inc., and the Seattle-Renton Mill Company, from Bryn Mawr across Lake Washington to the site of the new Barbee plant at Kennydale, has been completed. The most difficult task of the moving job was the transportation on some of a steel water tower 140 feet high, weighing 75 tons, across the lake.

Records at Federal

Speed records are being set in the building of five types of "quality" ships at U. S. Steel's Federal ship yards at Kearny and at Port Newark, N. J., said Lynn H. Korndorff, president of Federal, in a mid year statement.

"Shipbuilders of Kearny and Port Newark are engaged in building only high class ships," he said "Today they are building five types: destroy ers, destroyer escorts, big army troopships, Maritime Commission C-2 cargo ships and C-2's converted into naval auxiliaries.

"All five go to war.

"Each of the five we build faster keel laying to delivery — than any other shipyard, anywhere.

"On what has been described as the 'fightin'est' ship of this war, the destroyer, we recently again have beaten our own world's records in speed of construction. When Federal began its naval construction program in 1934, destroyers were built in two years. That has been cut repeatedly until during March a new keel-to-delivery record of 170 days was set on the Dashiell, a type of destroyer which naval men say has the fighting power of a cruiser of World War I. On a lighter type of destroyer, a building record of 137 days was set with delivery of the Thorn. This is more than four times the peace-time building pace.

"The total number employed here and at Port Newark has risen fifty per cent since January 1 and has doubled since July 1, 1942. During six months of this year we have produced as much, measured in tonnage of ships, as during nine months last year.

"We have launched 40 ships so far this year, as compared with 64 during 1942. Our 1943 score has been, on the average, one ship down

Constructed in Federal Penitentiary

Convicts in the Federal penitentiary at McNeil Island, Washington, built this vessel for the U. S. Army Transport Service. She is the T-88, 65 feet in length with a beam of 16 feet, and was constructed of Douglas fir. She was launched on June 17.



the ways and into salt water every four and a half days."

Nominating System For Sponsors

A new system of nominating sponsors for Liberty ships built by the New England Shipbuilding Corporation, South Portland, Me., affiliate of the Todd Shipyards Corporation, went into effect for a number of vessels built by the corporation on July 14, it was anounced by John D. Reilly, president of the Todd organization.

The workmen in the yard, numbering some 27,000, will select the names of persons whom they feel should sponsor ships and in all cases possible the suggestion will be carried out Mr. Reilly said

Honors Former U. S. Steel Head

James A. Farrell, former president of the U. S. Steel Corporation for 21 years,was honored when the Liberty ship bearing his name slid down the ways at the Bethlehem-Fairfield yard.

When the U. S. Steel Corporation was formed in 1901, Mr. Farrell was made head of the foreign development division. He became president in 1903, and while holding this position founded the National Foreign Trade Council and was twice decorated by the Vatican.

Destroyer Escort Launched

The destroyer escort U. S. S. Rich slid sidewise into a slip off the Sagi-

naw Bay recently in a unique and impressive launching at the yards of the Defoe Shipbuilding Company. She and two already completed DE vessels comprise the largest warships ever built on the Great Lakes.

Immediately after the launching, the hull of another DE which had been built upside down on an adjacent cradle, for ease of welding and speed of construction, was rolled over right side up in the cradle just vacated by the Rich. There it will receive finishing operations, such as inside work, machinery installation and erection of the superstructure.

These two events featured an action-packed hour at the Defoe yards. Other events included a demonstration of a "moving line" of submarine chasers in which vessels in various stages of completion were advanced to new posts in the manner of an automobile assembly line; the "rollover" of a submarine chaser, and the launching of a ship of the latter type.

12-Year-Old Girl Sponsors Liberty Ship

An employee sponsored ship, the S. S. George Vickers, was launched on July 22 at 4 p.m. from the Bethlehem-Fairfield Shipyard. The vessel, which was 33 days under construction, will be the 169th Liberty ship to be built at the local yard.

Miss Hilda Mae Brown, 12-yearold daughter of Jesse W. Brown, an employee in the Shipfitting Department at the shipyard, sponsored the vessel. Mr. Brown was accorded the privilege of naming a sponsor for a Liberty ship because his name was selected from a list of workers in his department with excellent attendance records for the month preceding the selection.

George Vickers, after whom the vessel was named, served as United States Senator from Maryland from March 7, 1868, to March 3, 1873.

DIESEL POWER FOR ARMY TUGS

(Continued from page 61)

unit is installed. This is made up of a Superior G.A. 6 diesel engine, direct connected to a 25-kw Electro-Dynamic generator, and having a Waterous pump twin disk clutch connected at each end. Each of these pumps has a capacity for 132 gpm. One circulates salt water through the oil cooler, the other circulates salt water through the jacket water cooler.

A Smith Meeker switchboard mounts the controls for the various circuits. It is equipped with Safety-Car voltage regulators.

On the port side of the engine room are installed: A York oil burning heating boiler; an Ingersoll Rand air compressor with tank and automatic pressure control; an engineer's work bench; and three Decatur automatic pressure controlled systems, one for sanitary water, one for domestic water, and one for drinking water.

Aft of the towing machine, on a flat running into the counter, are located the American Engineering Co. electro-hydraulic steering gear and a 7½-hp Electro-Dynamic motor, which drives an American Engineering Co. capstan located on the main deck above. Also on this flat is the ice machine, with controls on the bulkhead of the laundry room mentioned above.

On trials the LT-1, Major Ethel A. Robbins, demonstrated that the Enterprise engine operated with remarkably smooth efficiency and very good fuel economy. Her maneuvering ability was noteworthy in so powerful a tug. Her auxiliaries performed without a hitch.

These eight tugs, when finished in the near future, will be a capable and powerful group of auxiliaries to the large fleet of Army transport and supply ships.



Destroyer escort U.S.S. Rich sliding sidewise into her launching slip.



APTAIN EDWARD F. MACAULEY

The U. S. Maritime Commissioner, Deputy Administrator of the WSA, with Telfair Knight, Director of
Training for the USMC, officiated at Maritime Officers' Training School graduation ceremonies at Alameda.

In the upper left view, Capt. Macauley is awarding American Merchant Marine Distinguished Service Medal
to George Cronk, hero. (Story on page 81.)



America's Shipbuilding Admiral Tours Coast Yards

REAR ADMIRAL HOWARD L. VICKERY INSPIRES MORE SHIPS!



At Calship --

Left to right:
J. K. Doolan, Admiral H. L. Vickery,
Shirley Temple, J. A. McCone. (Foreground)
A. O. Pegg, C. W. Flesher. (Background)



TWO SHIPS IN ONE DAY-20 IN A MONTH

J. M. Warfield, of Calship, signs the papers for delivering two Liberty ships in one day, the yard's 19th and 20th of the freighters in June, for a new world's shipbuilding record. Participating in the event were, left to right: L. C. Munson, Pier Supt. for Williams-Dimond & Co.; Capt. Axel Pearson, War Shipping Administration Representative; Fred Hooper (standing), District Manager for American Hawaiian Steamship Co.; Mr. Warfield, A. O. Pegg, Calship's Outfitting Manager, and James Stewart, Principal Hull Inspector for U. S. M. C.



Left to right:
Admiral H. L. Vickery, J. K. Doolan, J. S. Sides,
Shirley Temple, A. O. Pegg



(Above)

At Concrete Ship Constructors, National City, Cal., Admiral Vickery awarded the "M" pennant, addressing huge crowd of workers shown in the center view. The honors bestowed on this new yard were acknowledged by R. S. Seabrook, executive of the shipbuilding firm.

Rear Admiral Howard L. Vickery, U.S.N., Vice Chairman U. S. Maritime Commission, honored Marinship by an inspection tour on Monday, June 28. He is shown here on the deck of a new tanker destined for the U. S. Navy.









At Marinship-

Harold Bolton, outfifting superintendent, convoys the Admiral over one of the new tankers. Center, Kenneth K. Bechtel, president of Marinship Corp., is explaining the broadcasting facilities located in the Mold Loft. Seated is Joseph Santry, president of Combustion Engineering Co. of New York. In the lower view are Yard Superintendent Albert Webb, Harold Bolton, Mr. Bechtel and Admiral Vickery.





Two good shipbuilders get together! Henry J. Kaiser is seen with Admiral Vickery as they are crossing the Bay, Richmond-bound.



At Sunnyvale, Charles E. Moore, president of Joshua Hendy Iron Works, escorts the distinguished visitor through the engine-building plant.



Carl W. Flesher, Regional Director of the U. S. Maritime Commission, addresses the assemblage at Joshua Hendy Iron Works, introducing key speaker Admiral Vickery. At the right, the official party inspects a turbine-job with Pres. Charles E. Moore (directly center) answering the questions.



While at Consolidated Steel Corporation's yard, the Admiral was honor-guest at launching of the U.S.S. Ogden. Sponsor, Miss Margaret Shelton. At the right: Thos. E. Beck, Admiral Vickery, Lieut. Weber, Carl W. Flesher, Joseph S. Wilson and Harvey Clemmer.



Left view: Admiral Vickery leading his inspection party down from the forecastle head of Hull 88 at outfitting dock, Western Pipe and Steel Co., South San Francisco shippard, Sunday, June 27. Above Admiral Vickery appear Carl W. Flesher, Regional Director Maritime Commission; L. N. Slater, president W. P. & S. Co.; L. W. Delhi, vice president and general manager; left to right; Arthur Sutton, Lt. Weber, U.S.N.; George Williams, superintendent autifiting dock; Thomas H. Beck, publisher Calliers Weekly; J. S. Wilson, assistant Regional Director U. S. Maritime Commission; Allan Toole, resident yard engineer U.S.M.C.; Charles E. Johnson, technical assistant to Admiral Vickery; Robert Friend, of Nordberg Mfg. Co.; F. W. Swaney, chief engineer W. P. & S. Co., and Duke Imholt, manager pay roll department W. P. & S.



BANQUETEERS AT THE BARBECUE . . .

Banqueteers at the barbecue . . . savory steaks, roasted corn, Spanish beans, and the trimmings. . . . (Upper left) Don Montague, as usual gets his plate of frijoles. (Upper right) E. Middlemas, Edwin W. Pike, V. J. Scatchard, R. Campbell, Dewey Davenport, Harry J. Summers, C. J. L. Schoefer, D. S. MacLagan, John C. McKnight. (2nd row left) S. M. Williams, Ed Broza, Frank Thornton, Bert Stewart, M. L. Mitchell, Ed Church. (2nd row right) Ray Sullivan, Fred Corder, Charles Lee (seated), J. G. Thompson. (3rd row left) Tom B. Forster, LeRoy Smith, D. Cuffe, Jay Piper, and some of their Bethlehem pols. (3rd row right) T. W. Bucholz, Capt. T. W. Peters, with Comdr. G. B. Jelly, USCG, Captain of the Port, and Ens. Frank Goodspeed, USNR. (Bottom row left) Joe Hare, Comdr. K. D. Wallace, USN, Mike Rados, Lt. Don Beck, USNR. (Bottom row right) O. Sandstone, J. E. Dodd, and H. Stern, all USMC inspectors.



President Joe Costello (appearing extreme left, portside the Lone Star) beams while Master of Ceremonies Ed Pawson calls on Lean Munson of Williams-Dimond for a few remarks. The chap offering the Java toost is Duke Decker.

Bilge Club Relaxes at Annual Frolic

"LET IT BE RESOLVED that all Bilgers and guests shall participate during our fourteenth Annual Cruise on Saturday, June 26, 1945, destined for relaxation and enjoyment in order that our troubles and cares can be tossed overboard for this day."

Thus proclaimed Joe M. Costello, new Skipper of THE BILGE CLUB, down Los Angeles-Wilmington-San Pedro way, as he issued sailing orders for voyage No. 14, to Bilgers and guests for an all-day three-way field day. Point of embarkation was the Palos Verdes Golf Club. Final destination was left open for the merry

Golf, Baseball and a mammoth Tug of War kept the crew active from 9:30 in the morning until Barbecue time at 4:00 p.m. Golf Chairman was Charlie Houghton. In charge of the Baseball classic was EdWhittemore, while the Tug of War was marshaled by E. L. Archibald. Chief Steward of the Barbecue was Walter Richards, Sr.

Awards for the athletic and gate prizes were of patriotic character in keeping with the spirit of the times and many of the lads found themselves richer by gifts of War Bonds and Stamps.

PMR came aboard and publisher Jim Hines and Los Angeles resident manager, Paul Faulkner, both report a grand day of goodfellowship and sumptuous victuals . . . with Jim hitting the Java trail and Paul increasing the Coca-Cola royalties!

Our official photographer did himself proud in capturing the spirit of the big event . . . as our readers will see from the pictorial record reproduced in these pages.

These spirited events have made the Bilge Club the Mecca of all maritime men—shipbuilders, ship operators and the marine supply departments. Every man-Jack who can possibly join up comes aboard with highest expectancy. Similar maritime groups in other localities please copy!





Deck Department "sluggers" played the signals of their captain, Alex Robinson. Skipper of the Engineer Department "wallopers" was Howard Hartry. The linament concession prospered as charley-horses flourished.









Heave Ho - My Lads!

The tug of war staged by the grunts and groans department proved to be a veritable battle of the giants with the howser-line standing up fine under the strain.

The athletes attacked the robust barbecue with sharpened appetites.

Maintenance of

Diesel Engines

III-Work in the Engine Room

by Carl Johnson

On your tours of diesel ships, you will often find a chief engineer, who to his way of thinking tells you everything about a diesel engine, but after walking through the engine room with him, you can soon judge his ability.

Often you are shown some indicator cards taken on the trip, because some steamship'companies demand a set of main engine indicator cards from each voyage. Most likely no one will ever look at them as long as a repair bill does not accompany them. When looking over these cards you sometimes wonder if they have not all been taken from the same cylinder with only a different cylinder number on them. This, of course, won't help the maintaining of the engines.

The crankshaft should be checked at least once a year either with a bridge gage or a dial indicator to make sure that the ship does not need to be delayed with a broken crankshaft. When the side doors are off, especially if it is a double-acting, two-cycle engine, take a thickness gage and make sure that you have the same clearances on the bearings of each crosshead. Also try the nut or nuts on the piston rod and make sure they are even all the way around on the crosshead. In doing this you may prevent a piston rod from breaking. If a new piston rod has to be made, get the threads well rounded so you don't start a crack in the rod with a sharp edge when it is in the lathe before you even get the rod in

Do not let the cylinder liners wear out too much before renewing them, as this will cause excessive wear on the piston rings and the ring grooves in the pistons will wear out of shape. You will also make a gas chamber of the engine room and endanger the health of the engine room crew. It also makes it hard to keep the engine room clean.

The thrust bearing also needs a little attention as it has to take all the pressure, and some years ago used to give us considerable trouble. I have seen times when all the rivets in the thrust bearing foundation have been loose and the thrust bearing so much out of alignment that the coupling bolts between the crankshaft and thrust shaft began to break. Nowa days most of the thrust bearing foundations are welded, and this climinates most of the trouble.

One job on a motorship that is never finished is the auxiliary gener ator diesels. They always need a lot of attention because they are running day and night. It is very seldom there are enough of them on a ship so that repairs can be made when the ship is in port, especially if they are using all the winches for loading and unloading cargo. Consequently overhauling of the auxiliary engines is usually done at sea. The ships always have a lot of spare parts for these engines and no heavy gear is needed for removing and replacing parts in them. Most of them are trunk type engines and the lubricating oil in them is hard to keep clean. You will often find an engine that has two to three inches of muck in the bottom of the crank case, and it is very seldom they are equipped with a separator. This means that the engine has to be stopped and the oil drained out or pumped out with a hand pump and then run through the separator. This is a very slow process, and in many cases this is the reason the oil is in such bad condition. If the engineers knew the harm and extra work dirty oil creates, they would prefer to keep the oil clean even with the extra time and work it requires to do so.

One thing you often see aboard ship is junk. Some engineers have a habit of saving everything for spares, even if it is a defective part that has been taken out of the engine.

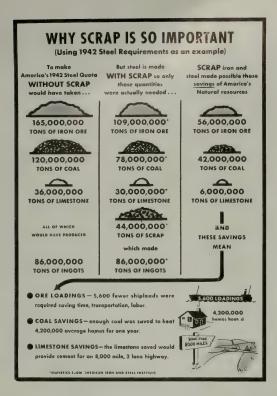
Not so long ago a good-sized diesel

ship came into this port. The ship had been taken over by another company, so it had new engineers aboard The engine needed some repairs, and among other things new pistons and a cylinder cover for the main engine However, the chief engineer told us he had a lot of spares aboard and they were in number 2 hold. So we started to dig for the spares, and the chief engineer was much interested. as he wanted to find out what was really down there. Well, we found about fifty tons of junk. There was nothing that could be repaired and used again; however, these so-called parts were on the engineer's list as spares. The boat had to remain in port for two months waiting for

Again practically the same thing happened to another incoming ship. This vessel had three auxiliary diesel engines, but only one in running condition. The other two had no exhaust valves. There were all types of valves aboard, but they were all unusable junk. This meant the ship had to lay up unable to load or unload cargo before new exhaust valves were made.

Never overload your diesel engines for any length of time, except in an emergency, as the owner will have to pay for that extra power you are taking out of them in a repair bill.

If you are chief engineer of a diesel ship, do not try to run your ship cheaper than the sister ship, if there is one, as you will lose out and in time will cost the owner more money in repair bills. Never say the chief engineer on the sister ship is doing the wrong thing before you are sure you are doing the right thing. Always keep the lube oil clean, also the engine and engine room, and make sure you are getting the best of the engine and not the engine the best of you.



some new occupational diseases, some of which may be seriously compared to those of combat warfare and should be checked to combat or allay such reactions.

(2) Employees

(a) Knowledge:

Any employee worthy of advancement should prepare himself for a higher position by acquiring the necessary knowledge, even at the cost of long and arduous study. Such knowledge is never a detriment as long as one has the intelligence to apply it practically.

(b) Ability:

An employee worthy of advancement should have the ability to perform the tasks requisite of such a higher position, as well as the ability to obtain the best work from his subordinates.

(c) Psychology (in this case, Personality):

The most successful foreman or supervisor should have a good person ality and an understanding of human nature as applied to a good workman, to obtain the most from his crew without arousing antagonism or by favoritism. Slight praise, cajolery or similar methods will obtain far greater results than whip-cracking in almost any instance; there are a few men who will best respond to the rough or bullying type.

Summary

A man does not need a thorough knowledge of all operations under his supervision if he has capable and trustworthy men in charge of different phases of such work and will let them know he has full confidence in them and their methods. He will ask them to turn out a greater volume only if he knows it to be possible, and will never ask or demand the impossible if he expects to hold their respect and obtain their best efforts.

ABSENTEEISM by Edward S. Lattimore

Absenteeism is probably the greatest problem in the shipyards today. It is responsible, to a large extent, for a slowdown in production. I believe that a possible way to combat habitual absenteeism is to institute a board or committee which would have full control of absensteeism, safety measures, clearance and discharging. This man, or board, should be well trained and able to cope with all the problems of the type with which he would be confronted. This will enable a better understanding of why workers are absent. It would bring about better working conditions, better safety measures and better health conditions. It would help retain in the plant a great many valuable workers who could be rehabilitated. Minor grievances, petty offenses, etc., are the outgrowth of poor leadership.

Leadermen and supervisors should be carefully selected not only on their merits of work and records but on their ability as leaders. Often I have perceived unrest and discontent because the leaderman did not understand his worker's mind. It is not an easy job handling men; favoritism, lack of interest in the men's particular tasks, and failing to pitch in and give a helping hand lead to the sowing of seeds of discontent. Discontent is probably the root of all absenteeism. As the old saying goes, "an ounce of prevention is worth a pound of cure.

WHAT IS A DAY'S WORK? by E. E. Wilkins

In the crazy-quilt pattern of American industry it is almost anything. We all know that variables in the amount of work performed in a given day exist within the same industries in different geographical locations. We all know that the same can be said for the same job in different industries in the same city. But are many of us familiar with just how great that variable is, or have we even thought about it?

Examples of over one hundred per cent variation are not uncommon in exactly the same type of work. Some of this practice has developed over a period of time until it has come to be considered as "standard" for this or that particular spot. But now and then on account of some emergency or some rivalry between different groups those men accustomed to the slower pace will demonstrate that they, too, can double their previous "standard" output. And this is accomplished without too much exer-

tion because, after all, they are only doing what other men are doing

every day.

We find, however, that this great variation exists mostly in the various phases of the construction industry where men use hand tools, including the manual electric arc for welding. Let us consider what happens to the automatic or semi-automatic machine tool operator. Here the top or one hundred per cent output is governed by the machine. It cannot be exceeded, but obviously certain unavoidable delays such as set-ups, changing dies, handling material, etc., cut down the maximum output.

Somewhere below this figure will be found the real output of the machine, depending on the skill and endeavor of the operator. Much closer standards are possible here simply because it is much easier to visualize or measure what a reasonable production rate should be, and these standards are largely maintained.

To get back to the use of the hand tool, then, it is not impossible to measure production. It can be done by comparison with others, by time study, by job planning. It can be done by cooperation on the part of management and labor.

In view of the increasing popularity of incentive earnings for increased production, the problem of fixing a base or standard rate upon which to build the incentive is one upon which much study must be applied.

It would appear that in a competitive world each job must stand on its own merits. Can we not get away from the idea that in taking it easy we are making a job for some fellow worker? Let us substitute the better thought that if such of us who are working would satisfy ourselves with a good day's work well done, we would build up an overall economy which would keep that "fellow worker" very busy indeed.

LAY-OUT SYSTEM by Oliver J. Millard

In the good old days away back in July and August of 1942, when the ways of Marinship were being constructed and C-2 cargo boats were being put together as well as could be expected under the circumstances, the work was going ahead although the yard itself was in a wild state of disorder and steel was coming up from Calship before the subassembly and plate shops were finished.

Many men and boys with little or no knowledge of the trade and but few hours of school work were being sent out to the hulls or to work on subassembly and the plate shop. Most of the leadermen and foremen were promoted, regardless of any qualification for the job

In these hectic days, we used to have lay out men on the hulls and on subassembly who were supposed to be able to read blue prints and have sufficient understanding of the measuring of the mold loft offsets, half-breadths, etc., to be able to lay out center lines, work lines of bulkheads, etc., to enable the flangers to pull the parts of the ship together without getting too much twist to the hull, to permit it to steer straight and stay upright when launched.

As these men received the munificent sum of \$1.33 per hour, every ambitious young fellow who could bluff his leaderman or foreman with the idea that he could do the work immediately became a full-fledged lay-out man. As time went on, there would be from four to six so-called lay-out men to each hull, and probably the same situation existed in the subassembly. This naturally brought the lay-out system into disrepute.

There was an oversupply of more of less incompetent men for the job

When the contract t a the tankers was awarded, in place of the cost-plus on the C 2 boats there was a grand tightening up. The band and most of the loafers were fired, and there was quite a noticeable and much-needed improvement in morale and general efficiency. At this time the lay-out men were all reduced to shipfitter's pay of \$1.20 per hour, or fired if not able to do the work expected of them.

To my mind, there is still a real need for at least two layout men to each hull, and probably several on the skids or on the subassembly. Of course they should have the proper background, be able to read prints and have sufficient knowledge of mold loft procedure to understand the meaning of offsets and half-breadths, etc. As this work entails considerable responsibility and previous training, it seems only fair that these men should be entitled to a higher rate of pay than that of an ordinary flanger or boiler maker.

Marinship is doing a very fine job and has shown wonderful and most noticeable improvement in the months of my employment. The launching

GLAMOR NOTE FOR WOMEN IN SHIPYARDS

Streamlining women workers' garments for safety achieves an accent of charm as well. This shipvard miss is modeling a one-piece cover-all approved by the National Safety Council. A shortsleeved blouse or sweater may be worn underneath. Note absence of loose gadgets or projecting buttons or flaps that might catch in machinery. The hair must be snugly tucked in a kerchief or turban against machinery and sparks. Shoes are of the safety type and of the same rugged construction worn by men.





PREFABRICATED SHIPS

At the Kearny yard of Federal Shipbuilding and Dry Dock Co., a forward deck house for a destroyer starts on its journey to be welded onto the hull. The yard produces records in production by prefabrication of ship parts and by using shipways as "assembly stations."

and delivery of 12 cargo ships and the launching of 2 tankers in less than a year is indeed something of which every employee can be proud.

THE USE OF HANDICAPPED EMPLOYEES

by William Dauterman (totally blind)

The present and future manpower shortage makes obvious the answer to the question, "Why use handicapped employees?" Men are being drawn from the essential industries into the armed services at a rate faster than they can be replaced by men from the non-essential industries and faster than women can be induced to go into industry. While acknowledging these facts, many employers are refluctant to take on the task of training and placing handicapped persons.

There are definite advantages to the use of well-placed handicapped employees. Because of the limited number of opportunities open to them, they tend to stay longer in one place and to be more satisfied with the job they have. In many cases, deep appreciation for the opportunity to work will be expressed by true loyalty to job and employer. This has been seen in many cases where the attendance records are above average and the skill of the worker definitely improves due to the personal interest he has taken in the new-found freedom which gainful employment brings to the formerly dependent.

The use of handicapped employees usually brings up the safety question. It should be considered first and at all times, but it is not necessarily a deterrent factor. Some slight adjustments in plant, routine or safety devices may eliminate the dangers. A study should be made in all cases to discover if some safety problem might exist, and if one is found a solution should be attempted before the project of using a handicapped worker is abandoned. It is particularly important that the worker be consulted as to his feelings toward the safety problems of any particular job. In many cases there are phobias related to the injury which resulted in the handicap. These phobias may act as a psychological block to efficient pursuit of

In a small plant the employment of a few handicapped employees may be accomplished with ease. In such cases the exact requirements of the jobs are more likely to be well understood by the employer or his hiring agent and hence bad placements are less frequent. Supervision is usually less diluted, hence maladjustments and inefficiencies can be detected more readily and corrected or eliminated.

The hiring of handicapped persons should not be attempted by large plants unless it is under the direction and supervision of an enlightened and well-staffed personnel department. It must be recognized that there are many limitations on the most advanced methods of employee selection, but these methods give results far superior to the hit-and-miss methods of hiring still practiced so frequently. The employment of the handicapped involves all of the usual problems of selection plus the specific problems related to the adjustment of the worker to the job relative to his physical limitations.

While it has been proved that emotional unsuitability of a worker for a specific job cannot be overcome with success, it is quite possible to train the individual to use all of his physical capacities in a new and unfamiliar operation. When it has been determined that a handicapped person, a potential employee, has the aptitude, the training, or that he can be trained for the job, it must be determined with care whether or not his physical limitations, the lack of or impediment of a sense, member or other ailment will prevent reasonable of the tency

It must be understood that the abvious limitations of a handicapped person are not necessarily the true ones. While there are no scientific evidences that the loss of one or more senses increases the capacity of the remaining senses, it is true that in most rises they are developed to their capacity as a natural compensatory masure. This full utilization of the remaining senses or members often makes possible skills which are unusual and sometimes unique. An illustration of this point is the successful use of blind persons in the grading of mica, a precision opera-

If the job analysis shows that the operation of the machine is accomplished by the use of the right hand alone, it is reasonable to assume that a pers a having no left hand would he able to accomplish the operation with no difficulty. But we cannot conclude that a man having only a left arm would not be able to do so with equal ease, for he may have developed the muscles and the agility of his let; hand which would enable him to do the required manipulation although the digits of the left hand are in reverse order of those of the right. Often such muscular coordination and sensory compensation makes possible adjustments which bridge the limitations of imperfect bodies.

The handicapped are human. They wish to do the things they can do best Give them a chance to do things they can do whenever it is possible. They all have imagination and can always do a little better if the employer has an equal amount of imagination and tries to find a spot which will demand a bit more than the minimum the worker has to offer. Recognition by extending opportunities to increase skills and carry more responsibility will drive the handicapped to his or her capacity.

AN HONOR ROLL FOR SHIP-YARD GANGS

by Jack A. Curtis

How would you like a kick in the pants? The average man wouldn't either, and furthermore, he wouldn't turn out a good job after receiving one. Yet today this is exactly the kind of treatment men are receiving, and nothing is being done to correct

thes restable. It would take so little to remedy this habit. Call it recolled to remedy this babit. Call it recolled to the later to the time to the later to the

A simple method of satisfying these two desires is this: Each week, from one of the crafts, select a leader man and his gang who have just fin ished a good piece of work. Then have one of the company officials write a letter of congratulations to the leaderman so that he, in turn, can show it to all his men. Don't stop at that, though. Go a step fur ther Place the name of each man, his craft, job, etc., on all the bulletin boards where everyone in the plant can see it. Call it the "Honor Roll." or whatever you wish, but get those names out there where they can be seen The following week do the same thing, but with a different craft and gang. In this way, everyone, eventually, will make the "Honor Roll" and no one will be slighted. In a short time you will see a marked change in the men. They will get over the feeling of being used, and begin to feel that they "belong."

If the Army, the Navy and the Maritime Commission feel this plan is worth while, it certainly is worth a trial by the company itself.

THE HUMAN ELEMENT IN PRODUCTION"

by Kenneth H. Beucus

Certain individuals, some not so open minded and others just stubborn, contend that production control, that is, planning, routing and scheduling, can accomplish all that is possible in improving the efficiency of a company.

We disagree. There is an additional element to consider.

Machines can be gaged and set to perform their maximum; not so the human factor. A man cannot be told to do a certain amount of work in a specified period of time and be expected to maintain that performance. He will work only so fast and no faster (especially in the war-hectic days of workers' independence). No matter how speedily materials and tools can be placed at his command, production is still limited by his skill, effort and attitude.

We here at the Bethlehem Steel Fabrication Department maintain that the human element must be considered. Through planning and see huling (wathout which no company can be efficient and is therefore a natural part of any management) and the payment of incentive (bonus) for sided effort, we have striven for and actually realized a definite increase in production.

May we cite a certain example?

In our welding department we have fashioned jigs and positioners to facultate the handling of work to be welded. After having conceived the most efficient method, we then take into consideration the man.

Through a record of past perform ances, time studies and studies of welding methods for the type of work, a "unit" is determined. A "unit" is a certain amount of work in a definite length of time. With all the controlled facilities at his command, the welder is expected to main tain work equal to the "unit." When he produces an amount of work beyond the standard expectation, the payment of an incentive bonus results.

One of our welders, when notified that a total of 19 units in an eighthour day would pay a twenty per cent gain, said, "Impossible, physically impossible."

The first day he turned in 13 units in 8 hours, the second day 14 units. Still it was "impossible." The latest return by this same operator was a total of not 19 but 28 units in 8 hours. He found by his own creative thinking a number of ways in which he could save time and thereby increase his daily bonus.

Did the application of incentive pay in this case? It did, because without added recompense the workman would have been well content to maintain the 13 or 14 or even 15 units at the most for an 8-hour day.

And the actual cost per unit to the company was less for every additional unit!

We have the welding machines hooked up electrically to an ink recorder in the office by which we can see the actual operating time of the machine. An additional arc totalizer, on which the actual burning time of the electrodes is recorded in tenths of hours, is also read.

Do the men resent this check? The answer is No! Each and every one of them is free to see his chart for the day, and they pride themselves in the lack of down, or idle, time that



WHAT THE WELL-DRESSED WELDERETTE WILL WEAR

Streamlining working garments for women in shipyards is essentially a safety measure, but it automatically adds a note of chic. Here is a model approved for welderettes by the National Safety Council Under the safety helmet the hair is drawn closely under a bandanna kerchief or turban . straggling hair is bait for moving machinery and a trap for torch sparks. This girl wears bib-front cover-all of fire-resisting suede and a short jacket of the same. Note the absence of any gadgets or flaps that will catch in

shows on the chart. A spirit of competition thrives and more production results.

One question that arises frequently is that regarding the quality of the work. Naturally we want good work.

work. Naturally we want good work.

Again to the welding department for an example.

All welds are immediately checked by a sub-foreman. If found to be bad, the workman is required to repair his own work. Naturally the amount of finished units is less in the scheduled time, and the worker thereby receives less bonus. As a direct result of this, inferior work is at a minimum.

Welding has been used for the examples because it dominates in the fabrication of steel today and also because our recording chart utilization is a new method for gaging welding production. However, other shop operations are also recorded on the same kind of chart. In the use of these charts we have overcome numerous bottlenecks. A delay is easily spotted and the reason for such a delay is investigated and, if possible, eliminated.

Work cards turned in daily by the machine operators are checked against the charts, and by the use of certain formulas for the various types of work a man's efforts are gaged to be gain or loss, as the case may be.

These work cards have a multiple purpose:

(1) The recording of time and costs for the work

(2) The basis for calculation of incentive earnings

(3) A record of the job's progress By utilizing the incentive records cost accounting is facilitated. Estimating is also aided by use of the "standards" that are the basis for the incentive figuring.

A psychological effect is resultant through the practice of securing production reports from the operators. It is only natural that the operators feel a sense of pride in the trust placed in them by the management for the reporting of their production from which they are to be paid. An accurate report directly results because the employee is personally concerned and has a monetary interest.

Because a premium is paid for increased effort, the workman tries to find new methods to perform a task quicker and more efficiently. This individual thinking produces a number of excellent ideas that become of great value both to the company and the employee. All these things have resulted from the use of an incentive system. We do not think but know that ours is good and with added experience will become better.

Should we therefore consider only planning, routing and scheduling, and forget the human element? No! Through past and present experience we have found that human effort is a great factor and perhaps the greatest.

ING SUPERVISION by Leland Stout

Under the old system, the following method of supervision of welders was in effect on destroyer hulls:

A leaderman had fifteen to twenty welders. About one-third of them were doing corrective welding and pickup for the other two-thirds. Corrective welding is welding over existing welding or filling up places that have been chipped out. Pickup is welding skips, small brackets and places that are hard to get at that the welder overlooked. Both operations are usually combined and called pickups, and are under the supervision of the welding inspectors. The leadermen were so busy that they only had time to check the general quality and completeness of the weld, if they looked at it at all. Since the welders work under a bonus system, they skipped anything they could get away with. The "completed" job was then turned over to an inspector to be picked up and brought up to Navy standards.

Under the present system an inspector checks each man's work every day and the welder is required to do his pickup before the end of the shift. He thus learns what mistakes he is making, and, by correcting them, how to avoid them. After a few weeks his work is so improved that he may only have a few spots to touch up each day. The inspection must be continued, however, because a few days of neglect usually results in double the amount of pickup the following day. The pickup that is found after cleaning and painting a compartment is marked and then welded under a contract.

The welding average was raised from three or four feet to six or eight feet of one pass weld per man hour. The pickup time was reduced from forty per cent to about five per cent of total time. The welds are better and their inspection is easier.

Foreign Shipping News

by Roger L. Simons

Shipping in Japan

News has reached non belligerent Sweden of the extent to which Japan has moved to combine and consolidate shipbuilding and ship operating in the lower tonnage categories throughout the areas temporarily under her dominance. Some months ago the Japanese Government had ordered an extensive program of standardization in the building of steel ships. The same policy has now been extended to wooden ships and three types have been decided upon. in carrying capacities of 100, 150 and 250 tons. Driven by the acute shortage of man power, the Japs have also consolidated all yards for wooden ship construction into groups, striving for only a small number of very efficient yards for this work.

All regions under Jap control are embraced in the new plan for wooden ship construction, and a special board has been set up for the administration of the program. The dream is that large shipyards for the building of wooden ships will be developed in Java, in the Schonan area and in Borneo. The Japanese military authorities are now overseeing the operation of the yards already operating in those districts.

Japan is, of course, dependent on herself for the propelling machinery and much of the other mechanical equipment on board the new craft, there being no way of bringing in more than a mere trickle of apparatus from outside. Many Japanese industrialists fear that the completion and outfitting of the new wooden ships will represent a further strain and drain on Japan's already war-burdened industry.

Insurance on the new wooden ships is anticipated in a new bill just submitted to the Japanese parliament. This bill would authorize the establishment of an insurance consortium, with representatives on the board, to take over the new risks.

Merger will out, and the story is current in Shanghai that even the entire traffic of Chinese junks in river shipping and along the China coast is to be merged into a single large Japanese operating combine. The proj ect is in the hands of the Japanese Tea Company, which is a quasi governmental proposition and which wields a monopoly of Chinese coast wise shipping. This new company, "junk dealers," if you wish, is being set up with a capital of 300,000,000 Nanking dollars, subscribed jointly by Japanese and Chinese investors.

New Danish Ice-Breaking Ferry

The Danish State Railways have taken delivery of a new ice-breaker ferry, "Holger Danske," largest and strongest in Denmark. It is 203 ft. long and 54 ft. beam and is powered by three steam engines each developing 2000 hp. The vessel is air conditioned and has a large passenger saloon with accommodation for 600 to 700 passengers. The cost of the vessel was 6,000,000 Danish crowns, or about \$1,200,000.

Death of Prominent Copenhagen Marine Man

H. C. V. Möller, former burgomaster of the City of Copenhagen, and widely known as the creator of the Free Port of Copenhagen, is dead at the age of eighty-nine. For many years Mr. Möller was harbor architect to the Port of Copenhagen and was responsible for extensive bridge and pier work in that city. He became Captain of the Port in 1913, and in 1917 became burgomaster for the technical department of the municipality of Copenhagen.

Danish Harbor **Construction Curtailed**

The shortage of materials which is rampant under Hitler's New Disorder is responsible for the curtailing of much announced new harbor construction in Denmark, Latest such instance is that of the port of Skagen, where a 7,000,000-crown project has had to be "postponed" because of the shortage of cement.

Preliminary work on the extension of the port of Frederikshavn is proceeding, as the present stage of the development does not call for any special materials.

Danish Engineer Dies

P Im Holm, he id at the service to the training of Danish marine commercia, is dead at the age of 50 verts. A member of several Americon and other tereson ships olding societies, Mr. Helm had been to the staff of the Acidemy of Technical Science and had published a number of books on marine engineering and general shipbuilding topics. A for mer Navy man, he had been head of engineer training in Denmark since 1925, and was widely known in international shipbuilding circles

France

The Paul de Rausiers, first coal ship to be built in France since the armistice, has just been delivered She was built for the Marseilles Al geria run.

New Shipyard Being Built in Spain

The Spanish Ministry for Trade and Industry has authorized the firm of Francisco Javier de la Rosa Mayol of Palma de Mallorea, the Balearic Islands, to construct a shipyard for the building of wooden vessels up to 500 tons.

Port Development in Portuguese West Africa

Development is proceeding on the extension of the Port of Luanda, Portuguese West Africa, under the direction of a Danish engineer, A. Loenberg. The first block was laid down in October, 1942, in a cere-mony during which the Portuguese Minister for the Colonies gave a radio address to open the new propect. Equipment includes a large crane to lift blocks of concrete up to 90 tons, as well as four smaller cranes, an electric power plant, a cement mixer, silos, washing plants, six conveyor belts and sundry barges. The project employs 65 white and 600 black workers.

Hungarian Waterway Development

Budapest waterway interests have formed a new company, named Altanos Magas es Melvepito (abbreviated "Altmag"), for the building of canals and the carrying on of other waterway projects in Hungary. The company is under the management of the large Danish international contracting consortium of Kampmann, Kierulf & Saxild.

Marine Boilers

by Thomas B. Stillman

and temperature of the steam generated by a boiler is determined by the requirements of the propulsion machinery. As knowledge of the art of designing and building steam machinery has progressed, the design and manufacture of boilers has kept pace, resulting in improved thermal efficiency and better operating economy in a ship. When the propulsion machinery used steam at 200 pounds pressure and 50 degrees F. superheat, the oil required per shaft horsepower per hour for all purposes is approximately .9 of a pound. At 400 pounds and 700 degrees F., it is approximately .65 of a pound; while at 1200 pounds and 900 degrees F., it is approximately .5 of a pound per shaft horsepower per hour. It is because of the trend shown by these figures that steam pressures and temperatures have been gradually increasing in steam-driven ships, these moving up as rapidly as progress in the art of building the propulsion machinery has commercially justified such in-

Higher Pressures

When it became desirable to build new connage in the 1920's, more attention was given to operating economy, which resulted in the use of 400 pounds steam pressure and 650 degroes F. steam temperature and in the more general application of supplementary heat-absorbing equipment such as air heaters. Two-inch tubes were still used for the boiler generating surfaces, but to obtain the higher steam temperature which was describle with the higher steam pressure, the superheater was moved from the overdeck position at the top of the first and second passes to an interdeck position in the first pass,

(Abstrict of aldress before Philadelphia Section, Society it Nicol Architect and Matthe Engineers, Ap. 1995, 2043).

where the products of combustion were hot enough to give the desired steam temperature with a superheater of moderate size. The horizontal-tube air heater had the air flowing through the tubes, the products of combustion flowing three times across the tubes. Boiler units of this type, complete with air heater, weighed, with water, approximately 40 pounds per square foot of boiler heating surface, and the corresponding weight per pound of equivalent evaporation at full power was 7 pounds.

The increasing use of cracked oil residue as fuel led to combustible and corrosive deposits lodging on any shelves in the gas stream, and made it desirable to eliminate, as far as possible, any ledges where such deposits could lodge. This led to the use of the single-pass type of header boiler, but in order to maintain the heat transfer rates of the three-pass, 2-inch tube type, smaller tubes were employed, with nine 11/4 inch or fourteen 1 inch tubes per handhole fitting. Due to the improvement which had taken place in the art of feedwater conditioning, the use of tubes smaller in diameter than 2 inches was entirely feasible. The wet weight of the 11/4 inch tube single pass header type unit complete with air heater and superheater is approximately 38 pounds per square foot of boiler heating surface, and the weight of the unit per pound of equivalent evaporation at full power is 4.5 pounds. The corresponding weights of similar boilers made of 1 inch tubes are 32 pounds and 4 pounds respectively.

Three-Drum Boilers

The use of three-drum or "A" type boilers has been very extensive in naval combat ships for a great many years, principally because of their light weight per pound of steam generated, and their compactness. In the merchant marine their use has been confined to the larger passenger ships almost exclusively, due to the fact that relatively large steam demands per boiler are desirable to justify fully the use of boilers of this type, compared to the header or two-drum designs. Representative boilers of this type, fitted with air heaters or economizers, weigh, with water, from 20 to 30 pounds per square foot of boiler surface, and from 3 to 5 pounds per pound of equivalent steam generated at full power.

Two-Drum Boilers

The use of two-drum boilers has shown an increase in the marine field the last few years, their relatively light weight and low cost of manufacture being important factors in their favor for installation in ships of moderate power, in spite of their comparative inaccessibility for quick internal cleaning and repairing. To do any such work on boilers of this type, it is generally necessary for a man to enter the steam drum, and it usually takes an appreciable time interval for such a drum to cool sufficiently to permit this. If a ship has only two boilers and is on a fairly quick turn around schedule, excel-lent care should be taken of boilers of the two-drum type to avoid the possibility of tube losses, or the necessity for frequent internal cleaning. The approximate wet weight of a representative two-drum boiler fitted with an air heater or economizer per square foot of boiler surface is 25 pounds and 2.7 pounds per pound of equivalent evaporation at full power.

When two-drum boilers of this type are placed abreast, with the furnaces outboard, a very compact arrangement of uptakes for the gases is obtained. It is generally preferable to install two units of this type in such a way that ready access is provided to the space above, and along-side of, the lower water drums, for inspection and for the removal. as

experience dictates, of the combustible and corrosive deposits that may collect in this zone when certain grades of oil are burned

1270 psi Boiler

An interesting installation of integral separately fired superheater type of controlled superheat boiler unit was made about a veir ago, de signed to deliver steam to a turbine using a reheat cycle, the operating steam pressure in the boiler drum be ing 1270 pounds per square inch and the remperature of both the high pressure and reheat steam to the turbine being approximately 750 degrees F To obtain optimum efficiency for a boiler unit operating at this pressure, both an economizer and in or heater are placed in the single uptake. This assures minimum gas outlet temperatures without danger of steam being generated in the economizer. Because of the relatively small proportion of boiler surface in this unit, and the required strength of the pressure parts, the wet weight per square foot of boiler heating surface is 72 pounds. The weight per pound of equivalent evaporation at full power is 5 pounds. It is interesting to note that this unit, with its relatively large percentage of superheating, air heating and economizer surfaces has a total wet weight per square foot of boiler surface directly comparable with the old Scotch boiler units designed to operate at approximately 200 to 250 pounds pressure. The weight of boiler unit per pound of equivalent evaporation at full power, however, is only approximately one-third the weight of the Scotch boiler. This installation emphasizes the fact that as the pressures, temperatures and boiler efficiencies have been increasing, the weights per square foot of boiler heating surface of these units rose steadily because the percentage of boiler generating surface grew appreciably less compared to the total surface in the unit. The weight of unit per pound of equivalent steam generated, however, remained pretty well in line, as with the better technique of handling boiler feedwater now available, the boiler surfaces are operated at higher rates, thus keeping the weight of boiler units, even of the modern higher pressure types, per pound of equivalent steam evaporated at full power, within the general zone of 3 to 5 pounds. It is the weight of a boiler unit per pound of equivalent steam generated that is the important figure in designing a

ship and not the weight of boiler unit per squire test of boiler heating

An the opposition in American marine bed repractice, which was intridu dies at the same time as superfact out: I, was the employ nout of double or casing around the boiler unit, diminiting the necessity of either closed firerooms or induced draft tans when units of this type were operated at high ratings. This procedure really amounted to nothing more than reducing the size of a closed fireroom, so that the combus tion air was blown into the double casing instead of the room itself. leaving the fireroom open for the operators, assuring much more convenient entrance and exit conditions than existed when air locks were, of necessity, employed with the closed fireroom construction

Forced Circulation

There are four basic principles involved in the various designs of forced-circulation boilers which have been installed from time to time in an experimental way for marine propulsion, most of these installations having been made in European tonnage

In the Loeffler system, steam is pumped through tubes lining the furnace and forcing a portion of the convection zone of the unit. Approximately one quarter of the steam issuing from the heating surfaces is sent to the turbine, the other three quarters being sent to a drum to be used in evaporating more water into steam to repeat the cycle. In this way, no steam is generated in pressure parts which are exposed to the products of combustion.

The Benson design is of the "oncethrough" type in which feedwater enters an economizer section and is discharged to the furnace circuits, where the generation of steam is started. The mixture of steam and water then flows to the transition section, where the last of the water is evaporated, the moderately superheated steam then going to a convection type superheater before being discharged to the turbine.

In the La Mont forced-circulation type of boiler unit the feedwater is delivered to a horizontal steam drum in a manner similar to that followed in the case of natural-circulation boilers, and from the lower portion of this drum, a tube supplies water to a booster pump, which discharges it to the furnace circuits. Each circuit disforges its maxture a steam and water into the have seed to one dream the manner sender to the party well in the header two natural areally perboilers Saturated dear with their from the upper ports is 2 if stone drum to a course to a type agenhe iter and so to the tinfine

In a unit of the Steamotice type, the feed pump sends the water through an economizer, and then to a distributing header. The circuit tubes branch out from this header. suitable resistors being placed at the entrance to each tube to assure the proper quantity of water to each cir built at all rates of operation. After leaving the convection boiler bank. the steam and water mixture is discharged from the circuit tubes tan gentially into a small vertical sepa rating cylinder. The saturated steam flows from the upper central portion of this separator to a convection superheater, while the excess water is discharged from the bottom of the separator and returned to the deacrator or feed tank. Under fullpower conditions of operation, approximately 10 per cent more water is pumped than is generated into

200 psi Vs. 1270 psi

It is interesting to compare the percentage heat absorption characteristics in different parts of the heat absorbing surfaces of a boiler unit operating at 200 psi and 50 degrees F. superheat, as used during the last war, and a modern boiler unit designed to operate at 1270 psi and 750 degrees F. reheat. The percentage of the heat absorbed by furnace radiation remains approximately the same for both units, but the heat absorbed in the boiler bank of the modern unit is only half of that absorbed in the boiler bank of the lower pressure unit The percentage of heat absorbed in the superheater of the modern unit is nearly nine times as great as that in the older installation. The economizer and air heater in the higher pressure unit are responsible for giving it an efficiency approximately 8 per cent higher than that of the older unit, with both operating at designed full power. Thus, in keeping up with steam requirements of modern turbine driven tonnage, the boiler units are appreciably more efficient than were the low pressure boiler units of years ago, and in addition they are so well designed that they weigh less per pound of equivalent steam generated at full power than did the older units.



Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief,"
Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

IX-Auxiliary Turbine Equipment

The auxiliary turbine equipment furnished for each tanker includes the following items:

Two 525-kw turbine-gear generator sets, each consisting of:

(1) One 800 hp, 5645-rpm steam turbine.

(2) One 5645/1200 rpm single helical reduction gear.

(3) One 400-kw, 450-volt, 1200-rpm alternating-current generator.

(4) One 75-kw, 110-volt, 1200-

rpm direct-current exciter.
(5) One 55-kw, 120-volt, 1200-

rpm direct-current exciter.
(6) One 1500-watt, 60-volt, 1725-

(6) One 1500-watt, 60-volt, 1725-rpm direct-current, amplidyne generator.

(7) One voltage regulator.

One 50-kw port turbine-generator set, consisting of:

(1) One 75-hp 3600-rpm steam

(2) One 50-kw, 3600-rpm, 450-volt a-c generator.

(3) One 1-kw, 3600-rpm, 120-volt dec exciter.

(4) One voltage regulator.

Two 115-hp turbines for boilerfeed-pump drive, each consisting of: (1) One 115-hp, 4000-rpm steam turbine.

Operating Conditions

525-kw set. The normal steam condition is 424 lb. gage, 720 F. at the turbine throttle valve, with a vacuum of 28½ in. at the turbine exhaust flange. The sets are designed for operation at a maximum temperature of 790 F, at the turbine throttle.

Each set will carry 25 per cent verload on each unit for a two-hour The 75-kw d-c generator is capable of carrying a sustained current of 800 amperes at either 220 volts or 240 volts for a period of one minute without injury. The turbine will deliver sufficient power to carry this load, provided the total demand does not exceed 656 kw.

50-kw set. The turbines are de-

50-kw set. The turbines are designed to deliver 50 kw, 8 p-f at 3600 rpm with steam conditions of 75 lb. per sq. in. gage, dry saturated steam at the turbine inlet flange and 0 lb. per sq. in. gage at the turbine exhaust flange. When operating at these conditions, a steam rate of 77.3 lb. per kw-hr is guaranteed. The turbine will be capable of operating on steam conditions of 125 lb. per sq. in. gage, dry steam at the turbine inlet and 26-in. vacuum at the turbine exhaust.

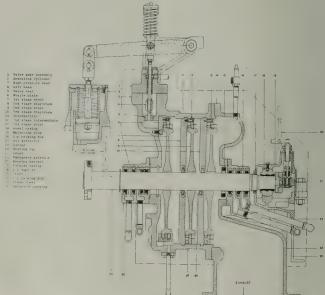
The generator is maximum rated 50 kw at .8 p.f (no overload) and the turbine is designed to develop this

DIVISION OF LOAD

% Load	KW	A-c Gen. (.8 p.f.)	D-c Gen.	D-c Exciter	Steam Rate Lb/Kw Hour
50%	262.5	200	37.5	25	15.3
75%	393.75	300	56.25	37.5	14.3
100%	525	400	75	50	13.8

(For operation at the same inlet condition but with a vacuum of $28\frac{1}{4}$ in., multiply the above steam rates by 1.015.)

period when operating on the above steam conditions. The 500-kw load on the a-c generator for this condition is at unity power factor. output with steam conditions of 75 lb. per sq. in. gage, 3 per cent moisture and 5 lb. per sq. in. gage exhaust pressure.



115-hp unit. These turbures are designed to deliver 115 hp at 40% upon with steam conditions of 458 lb per sq in gage, 50% deg F total temper ature at the turbure inlet theme, and 1% lb per sq in gage at the turbure exhaust thinge. When operating at these conditions, a steam rate of 418 lb per hp hr is guaranteed.

800-hp Turbine

Following is a description of the General Electric Turbine of the type used for the 525 km auxiliary generating sets of which a sectional assembly view is shown in Fig. 1.

A spring-load relief valve is located on the exhaust end of the turbine casing for protection of the turbine against excessive exhaust pressure. This relief valve is normally adjusted to open at 10 lb. gage, and this set ting should prevail at all times when operating condensing or when operating non-condensing with exhaust pressure at or slightly above atmosphere. At no time should the relief valve be set above 15 lb. gage.

Diaphragm packing. The dia phragm or interstage packing rings are made of metallic alloy in four segments. The bore of the ring has a toothed labyrinth projecting toward the shaft. The ultimate clearance between the ring and the shaft is obtained after the machine has been in service, and will not become excessive except in case of abnormal conditions. A circumferential shoulder engagement of ring and diaphragm serves to hold the ring in proper clearance and concentric alignment with the shaft. Springs in the upper and lower halves of the diaphragm hold the packing segments against the shoulder.

Shaft packing. Packing is provided where the shaft projects through the high-pressure and the exhaust end of the turbine, to prevent steam leakage when the pressure in the easing is greater than atmosphere, and to prevent air being drawn in when the pressure inside is below atmosphere.

The carbon rings are enclosed in individual casing chambers. Each carbon ring is composed of three segments with butt joints. The packing ring is held in its position, and concentric with the shaft by means of a garter spring.

Steam seal and drain piping. Steam for sealing is applied to a point in the box so as to obtain one ring of sealing between that point and the drain and obtain one or more rings of sealing between the point of application of live steam and the casing. In gen-

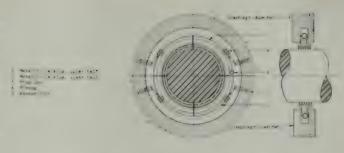


Fig. 5. Diaphragm Facking (525-kw Set)

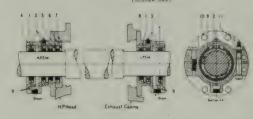


Fig. 4. Shaft Packing (525-kw Set)

eral, a pressure of 2 lb. per sq. in. on the gages will be sufficient for all sealing purposes.

facking bux, upper half

Valves should be placed in all drains that discharge into a closed system, that will contain vapor when the turbine is stopped so that the drains can thus be closed to prevent vapor entering the turbine casing.

Valves must be placed in all drains from pressure stages and also the exhaust casing when exhausting against back pressure so that they can be closed during operation and prevent the discharge of steam.

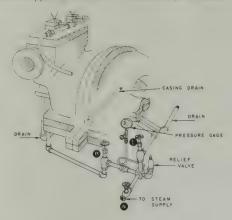


TABLE OF VALVE OPERATIONS					
VALVE	A	В	C		
BEFORE STARTING	CLOSE	CLOSE	CLOSE		
WHILE STARTING	OPEN	ADJUST	ADJUST		
WHILE OPERATING	ADJUST	ADJUST	ADJUST		

Pig. 5. Steam Seal and Drain Piping



Steady as you go! HNOWLEDGE IS THE STRAIGHT COURSE TO ROUANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome St., San Francisco, California

Convoy Operation

III-The Armed Guard

On trips around the waterfront, "The Skipper" frequently hears reports about friction and trouble between the merchant marine officers and the armed guard officer. Fortunately for all of us, these reports are in the minority, but they occur frequently enough so that a word or two about them might not be amiss in these pages, where we try to handle all problems that affect the shipping fraternity as best we can.

Most of the reports we hear are of a trivial nature, and if we make an effort to understand what is behind them, we are able to view these troubles in their true light, and discontinue the practice of making mountains out of molehills.

Merchant marine officers receive their education and training through the school of hard knocks, and as a whole will usually be found to be well qualified for the jobs that they hold. There are, of course, a few exceptions to this rule, as to all others. with the present scarcity of licensed officers to man the victory fleet. Because of their training and background, most merchant marine officers are proud of their calling and of the practical knowledge that they have acquired through the years, and especially when this knowledge has been largely self-taught. They are very critical of the ninety-day wonders of their own profession, and it is only natural that they would be more so of any other person with limited

The armed guard officers are as a whole youngsters with very limited

knowledge of ships or of the sea, and before being sent aboard they are given brief courses in Navy Regulations, Naval customs and traditions, and a practical course in gunnery, sufficient to handle the armament that is placed on merchant vessels. They are placed aboard the ship for their military knowledge only, and neither the Navy nor anyone else claims that they are sailors in the broad sense of the word.

They have a very responsible job in defending your vessel, and in the Naval service the armed guard officer is the commanding officer of a detached force of the United States Navy, and as such commanding officer he has similar duties and responsibilities to those of the commanding officer of any other naval ship or shore establishment.

The Navy furnishes the armed guard officer with a book of instructions that is marked and classed as confidential. A copy of these instructions is often given to the master of the vessel as well. If you do not get a copy of these instructions, borrow the copy belonging to the armed guard officer and read it carefully.

It will contain many things that you need to know to properly defend your vessel from attack. It also mentions the need for cooperation between you and the armed guard officer in the handling of your vessel during the time of attack. It is imperative that both of you understand the respective actions of each beforehand at this crucial time. Remember, he is charged by the Navy with de-

fending your vessel and carrying on the fight as long as he has a gun able to bear on the enemy.

At the convoy conference he should also attend with you, and if he does not, anything that pertains to the safe passage of your vessel or any hazards that you might encounter on the proposed passage that you learn about at the conference should be shared with him.

Experience has taught the Navy the best way to handle a vessel should the wake of a torpedo be sighted. These simple rules will be made known to you at the convoy conference, and you and your armed guard officer should rehearse them well in advance so that each of you will be aware of what is to take place, should the occasion arise for any action.

The Instructions from the Navy Department inform the armed guard officer that his men are placed on the ship to perform military duties only. They are not to be used as lookouts in lieu of the merchant marine crew, nor are they to be used as cargo or hold watchmen, or perform any other duties of like nature. It is well, therefore, that you do not attempt to require his men to do these things. He is in duty bound to refuse to let them do it.

Because of the need of experienced gunners within the fleet itself, the armed guard crew on your ship will also be quite recently from civil life, and like their officer will probably not be sailors, but they are able to handle the guns, and that is the only reason for their being on your vessel. They are proud of their service and work very hard at it. ' Skipper" has met armed guard crews that almost worship their merchant skipper, and tell some great and enthusiastic tales of the way he handles his ship. There are also, of course, tales of the other kind that they tell.

One such had to do with a skipper of a Liberty ship recently returned from a long voyage, during which time one rarely saw the skipper without a cup of coffee in his hand or one, on the way up to the bridge to him. There was plenty of coffee on board, and coffee was always on hand in the messroom, yet he issued orders to the third cook to allow no coffee to the armed guard crew.

That is what we would call an unenforceable order. The merchant crew saw to it that the armed guard crew received their coffee, even if they had to stand by while the Navy boys drank it from the cup. When the vessel arrived at the home port, the merchant crew to a man got off, and the armed guard would have also, were it possible, but they are to remain with the ship on her next voyage

What kind of cooperation is possible on a ship under those conditions, and what good did that silly order do? I doubt that it saved as much as a pound of coffee, and did the captain and his vessel immeasurable harm.

Another ship received a new third officer who came aboard wearing an ensign's uniform in the U.S. Mari time Service, a uniform that he was properly entitled to wear. After he was on board a few days he appeared in the saloon for coffee wearing the shirt and collar pins of an ensign, but without his cap or coat. The young Naval ensign went immediately to the captain and asked him to require his third officer to either wear his blouse at all times, or remove the collar pins, for without his cap and blouse he looked like a naval officer, and that was against the law.

The captain had a long talk with this young ensign, but I am afraid that an armed guard officer making that kind of a start on board would not have a very pleasant trip, and would return with all sorts of complaints about lack of cooperation from the merchant marine officers

during the voyage.

Last year the Navy Department was getting many reports about this lack of cooperation from armed guard officers, but we believe the department was properly discounting them, for we have heard nothing along this line recently.

From one returning ship we heard an interesting story of an armed guard officer who was so efficient in his duties as he saw them that he had his crew badly upset, and in a state of very low morale. One night on the evening watch the mate, an oldtimer, that in his day had seen all sorts of disciplinarians come and go, took the younger officer up on the bridge with him, and told him many things that he had learned the hard way about handling men, and enforcing discipline and respect without resort to courts martial, and reports.

The younger officer was very appreciative, readily admitted his mistakes, and in mending his ways made a very happy family out of his crew, to the betterment of the ship and the service as a whole.

However, I would recommend that

you know the other to whom you are talking well, and are sure that he would appreciate any help you can give him, before you make any effort to interfere with his handling of his crew. Some youngsters will only learn in one way.

We spent an interesting afternoon last week abourd one of the happesst ships it has ever been "The Skip per's" privilege to board It had a full complement of young men in all departments, and these young men seemed to get along extremely well, sharing their liberties, their pleasures and their work.

In trying to account for this picture, which is so different from the one we usually encounter, we found that it all came right back to the officers, from the captain on down. The Navy crew had a Victrola, and all hands bought and shared records for it, and their evenings in the messroom were pleasant ones.

The armed guard officer arranged games that were played by various departments in competition for prizes put up by the department officers, and the voyage wound up with a spelling bee between the Navy, the deck gang and the engineers. The prizes were cartons of cigarettes officered by the department officers.

The gunnery officer was admired and respected by all officers, and he considered them all his friends. He and the captain were close associates, and yet in looking over his crew, the battle stations and the number of merchant sailors that had learned to handle the guns, as well as judging by the clean shipshape appearance of the guns and gun tubs, one couldn't help but feel that this is the type of ship that if trouble ever overtakes her will give a very good account of herself before she slides under.

To sum up in this matter, the job of the skipper and his staff is to get the ship and her valuable cargo to her destination. The job of the armed guard is to protect and defend her

As the truth Has tell is streth military. As long as you both as your to the same place, and have the same rule or to perform the rule way to do to the military and consideration, one for the other and with mutual respect and confidence, there is no reason for any first; a what socket.

Answers to Questions from Ships To H. C. O.—The Convoy Commander. The convoy commander has a very serious and responsible job in the convoy, and his word must be law. He frequently has information that is not available to all masters. Your job is to follow out his orders to the letter without questioning them for a moment.

We are well aware of the fact that it is easy to prove after your safe arrival that a zigzag was not necessary, and that you could have arrived here a day sooner, if there wasn't so much zigzagging, but could you? Would you have arrived at all? We are not so sure ourselves at all?

If you once familiarize yourself with the turn signals for a particular convoy, and know them so well that you are sure of them, then execute the signal yourself properly regardless of what the fellow ahead of you does, except, of course, do not run him down.

To A. L. B.—Sounding Tube Scales. To determine the depth of water on a sounding tube without a scale, with a 24-inch tube, measure the used or discolored portion, and divide this by the length of the unused portion and multiply by 5.5.

Thus: $\frac{1}{6}$ unused part \times 5.5 equals $\frac{1}{6}$ = 3 \times 5.5 = 16.5 fathoms. This is the same proportion used in the manufacture of a scale, and is accurate.

"The Skipper" welcomes any questions of this nature that have to do with the practical problems that we frequently encounter from day to day.

With a pair of calipers, George Mathews checks spacing between blades on a steam turbine spindle for a new war cargo ship. These hundreds of blades will extract 2000 horsepower from steam which enters the turbine under about 25 ps pressure.

Photo courtesy Westinghouse



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Underwater serts that come grooved to pro

At the East Pittsburgh Works of the Westinghouse Electric and Manufacturing Company, underwater resistance welding has replaced many of the routine processes of soldering or brazing of standard copper cable to terminals. This modification of a standard welding process has saved considerably in production costs by raising output and improving the quality of finished products.

Essentially, the process consists of welding by means of special tips and having a stream of water playing on the stranded wire near the electrode. Water is applied at a volume sufficient to cool the work and prevent oxidation at the weld.

Machines for this work are usually designed with one fixed and one movable electrode with a special jig fastened around the stationary terminal to hold the parts firmly in their relative welding positions. Electrode tips as now used are made of carbon, molybdenum and cupaloy. Increased tip life is obtained by mounting them in water-cooled holders. For welds that do not require flux, cupaloy tips with molybdenum inserts have been found most satisfactory. Carbon tips are required where flux is used. In-

serts that contact the wire are grooved to prevent flattening the cable.

By means of a foot pedal, the operator initiates the lowering of the upper electrode to complete the weld. The machine is air operated and is timed by electronic controls which insure a quality weld. The completed assembly may be removed immediately without the use of pliers or gloves.

Figure 1 shows typical welds made by this new process. With time values based on a 60-cycle basis and a small stream of water playing on the wire adjacent to the weld, the technical data for upper end of left-hand assembly is as follows: 2352 strands of .002 wire welded to .037" thickness of copper. Time 38 cycles, current 14,400 amperes, 400 pounds electrode pressure. Cupaloy tips with molybdenum inserts on both top and bottom. The lower end of the same assembly has the wire welded to two pieces of .020" thickness of tinned copper. Time required was 26 cycles with current of 14,400 amperes and 400 pounds electrode pressure. Flat surface tips used on both molybdenum inserts, current and time, are proportional to the size of the weld.

This job, formerly a hand operation, is now a line production opera-

tion. Cost of production has decreased and quality and appearance of the completed parts have been vastly improved.

A noticeable comparison in completed assemblies by the old and new methods is that the wire cables remain flexible to the point of weld in the underwater resistance weld. In either the soldering or brazing process, molten metal cools after being drawn into the hot cable by capillary action. Cooling the parts with water not only makes handling easier but heat is removed from immediate area of the weld rather than passing to more distant areas. Thus, the original properties of the individual parts are not changed.

The savings and results of this process have made underwater resistance welding a standard part of quantity production.

Electric Deck Winch

This winch, one of various types produced by The Jaeger Machine Company, Columbus, Ohio, is made up of two 20-inch diam. drums mounted on a single shaft with an 18-inch gypsy keyed to each end of the shaft. The frame is of welded plate construction with the bearing blocks built integral. Most of the operating lever linkage is located under the sub base.

Its motor is mounted on the sub base with the electrical control mechanism below deck and master switch located at some convenient point above deck. Motor is reversible and equipped with a magnetic brake. It is connected through a flexible coupling to a two-speed transmission.

The transmission consists of helical gears running in oil on ball bearings. The hoist shaft is driven by a large spur keyed to the shaft, and the two drums are driven by jaw clutches and equipped with handoperated brakes. Each drum is fitted with a ratchet and pawl. Capacity of this unit is 12,500 lbs. at 110 fpm line speed.



Typical welds made by the new welding process.

Lunning



Lieutenant W. C. Peet Named W.S.A. Coast Director

The shipping fraternity is welcoming Lieutenant W. C. Peet to his new post as Pacific Coast Director of the War Shipping Administration with headquarters at San Francisco.

On Friday noon, July 30th, an informal luncheon was held by the Board of Governors and members of the House Committee of the Propeller Club at San Francisco and with

the officers of the city's Junior Chamber of Commerce in honor of Lt. Peet where the new W.S.A. director expressed his delight at being adopted as a Californian and pledged his best assistance to Coast maritime men.

Lt. Peet will be remembered by many shipbuilders on the Coast range as capable aide to Rear Admiral Emory S. Land, Chairman of the United States Maritime Commission, when the shipbuilding leaders toured the West Coast Yards in May of this year.

The new W.S.A. Executive has already tackled his new job and with broad shipbuilding and operating background brings to his new duties an enthusiasm and ability which should prove beneficial to Coast operators in their W.S.A. dealings.



It's the First In the Entire United States!

It was a big day for Captain Charles J. D'Hooghe and his Auxiliary Military Police Unit at Western Gear Works in Seattle when Mrs. Anna Roosevelt Boettiger, daughter of President Roosevelt, presented to their unit the first Army Guidon to be authorized by the Army in the nine western states. A large group of high Army and Navy officers, state, county, and city officials, and civic leaders attended the coremony. Mrs. Boettiger and Captain D'Hooghe are pictured above displaying the Guidon.

"IT WORKS LIKE THIS," said Thos. J. Bannan, executive vice-president of Western Gear Works, as he exhibited the gearing for a planetary capstan to a group of distinguished guests. The inspection trip followed the award to the Seattle plant on July 1 of the first Army Guidon in the nine western states. The group, from left to right, are: Mr. Bannan; Captain L. J. Stecher, Inspector of Naval Materials, 13th Naval District; Brigadier General Eley P. Denson, Commanding General, Seattle Port of Embarkation; Mrs. Anna Roosevelt Boettiger, daughter of President Roosevelt; Colonel H. H. Galliett, Commanding Officer, Northern Security District; and Major Daniel C. Imboden, Chief Plant Guard Officer, Northern Security District.





Officers of the Women's Organization for the American Merchant Marine— Left to right, front: Mrs. O. B. Whitaker, Mrs. Geo. Brown, Mrs. C. S. Hallock, Mrs. B. C. Edwards, Mrs. F. A. Nichols, President.

Rear: Mrs. W. H. Griffin, Mrs. John Steitz Jr., Mrs. Robt. Allen, Mrs. John M. Dempsey.

Launching of Thomas Nelson Page, Baltimore, Md. Mrs. Fred Arthur Nichols, President, Sponsoring.

New APL Director

Henry F. Grady, President of the American President Lines, has an nounced the election of A. Emory Wishon, prominent business execu tive, to fill a vacancy on the Board of Directors of the American President

A native of St. James, Mo., Mr. Wishon graduated from the University of Missouri School of Mines and Metallurgy in 1908, and soon there after began his business career with the Coalinga Water and Electric Co., where he introduced electricity in oil well operations.

He joined the San Joaquin Light & Power Corporation in 1910, was made assistant general manager of all properties of the company in 1913, general manager in 1920, and served as president from 1930 to 1938.

Mr. Wishon is a director, vice president and assistant general manager of the Pacific Gas & Electric Company; a director of the Yosemite Portland Cement Company, and vice president of the Valley Electrical Supply Company.

Mr. Wishon has given a great deal of time and attention to the development of better public relations in the utility field. He is author of "Self Interest," which is an appeal for a more enlightened public relations attitude on the part of utility companies toward their patrons.

Chief Estimator Meeth

Conrad Meeth, representing Moore Dry Dock Company in San Francisco with offices in the Balfour Building. took over Frank De Pue's office lock, stock and barrel when the latter severed his connections with Moore's after a record of 25 years service on July 1.

"Con" Meeth, as everyone knows him up and down the Pacific Coast, has covered the waterfront for 30 years and is in his 19th year with Moore Dry Dock Company.

In 1924 he went to work in the office of Chief Estimator Alex Greig, under whose able leadership in the ensuing years he figured on many new ships of all types as well as repairs and conversions.

New title for "Con" in this well-deserved promotion is Chief Estimator of the San Francisco office.



EMORY WISHON



CONRAD MEETH

Propellers at Los Angeles

A luncheon hours a Captain Edward Macauley, monitor of the United States Maritane Commission and Deputy Admin test in the War Shipping Administration was held in the Los Angeles Clamber of Commerce Building, July 15. As sponsors the Propeller Club, Port of Los Angeles Long Beach No. 66, joined with the Foreign Trade Association ciation of Southern California Los Angeles Steamship Association, Merchant Marine Post No. 420, American Legion; and the Chamber's Har bor, Foreign Commerce & Shipping Committee The program included an address by Captain Macauley, display of the 9-foot, scale model of the Calship EC2 Liberty cargo vessel, Billy Mitchell; and presentation of the Merchant Marine Distinguished Service Medal to a merchant seaman for extraordinary heroism.

Max G. Lindner, newly elected president of the Propeller Club of the United States, Port of Los Angeles-Long Beach, announces completion of arrangements by the Secretary of the Navy for construction of the Cruiser Los Angeles. The naming of the cruiser after the city of Los Angeles is regarded a signal honor as it is the first time in the history of the city a first line naval unit has been named after it. The cruiser will cost some \$40,000,000. which must be subscribed by Los Angeles County through the purchase of War Bonds.



Max G. Lindner, President and General Manager of the Transmarine Navigation Corporation of Los Angeles, is the new President of the Propeller Club of the United States, Port of Los Angeles-Long Beach.

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A new contract for 1. " triple exse in steam one nes used to power
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T. H. Banfield, president

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J. S. Himes, Publisher Francisco, Calciornos

ar Mr Hines

We make to a use our appreciation were for having sont as the half we engineering that appeared in the time. Marine Review

We believe the status in wait of a less publication are traily revealing tremend as effort being made in maritime industries to lick the the of transportation.

You are indeed to be complimentions and please be assured that if the sure to be interest to we, will immediately forward the in-

Thank you for your cooperation d we hope that we may be able to

Y ars for Victory.

Sen Francisco Junior Chamber of Commerce (J. R. 200 Dess. Secretary Monager





Dignitaries at First Graduation Exercises of the Maine Maritime
Academy, Castine, Me., on May 29, 1943

Front row, left to right:
Raiph A. Leavitt, Portland, Chairman Board of Trustees: Captain Howard Copeland, Boston, director of p sonnel, First Naval District; Governor Summer Sewall of Maine; Rear Admiral Dauglas E. Dismukes, Supintendent of Maine Maritime Academy, Captain Richard Quick, Bath, Vice Chairman, Board of Trustees.

Second row, left to right:

Arthur M. Tode, Hosorary President, Propeller Club of the United States and President of the Board
Visitors, New York State Maritime Academy: Commander Charles M. Lyons, Boston, Merchant Marine
spector Relph K. Barter, Stanington, Trustee; Captain Robert M. Gray, Superinteedent Massachusetts M
time Academy: Commander Norman L. Queen, Washington, D. C., Supervisor of all American Marit
Academies.

Third now, left to right:

Commander Macrice B, Durgis, Augusta: Edwis Andrews, Portland, trustee; Arthur H. Nesbit, Portland, U. steambaot inspector: Dr. Harry Y. Gifson, Augusta, State Commissioner of Education; State Senator Her Emery, Backsport: Henry O. Trowbridge, Bath, of the Academy's Visiting Board.



These thirty officer cardidates were knowed with ribbon presentations by Capt. Edward Macauley at rece ceremonies at Alameda base. All have had torpedoing experiences . . . adding their names to fillistrious roster of seroic merchant-naminers.



Admiral Vickery and party at inspection of Hull 88, outfitting dock W. P. & S. South San Francisco shipyard, Senday, Jume 27, 1943. Left for right: J. S. Wilson, assistant regional director Maritime Commission: Thomas H. Beck, president Connect Publishing Company; Arthur Suthon, W. P. & S.; Charles E. Johnson, technical assistant to Admiral Vickery: Robert Friend of Nordberg Mfg. Co.; Lt. Weber, U. S. N.; George Williams, superintendent outfitting dock W. P. & S. L. M. Stater, president W. P. & S. W. B. Imboth, manager payroll department W. P. & S.: Carl W. Flesker, Regional Director U. S. M. C.; Allan Toole, resident yard engineer Maritime Commission: Rear Admiral Howard L. Vickery: F. W. Swaney, chief engineer W. P. & S. and L. W. Delhi, vice president and general manager W. P. & S. Co.



Saving Lives — Their Business

If American seamen carrying precious materials for mar to every benting front don't have adequate life saving equipment on board their merchane ships, it won't be the facilities these mon. The frue caught by the camera going over the latest plans for lifesaving economent, include

(from left) William H. Shoemaker, Gunderson's chief draftsman Wice Premdent A E Gunders in President C. E. Gunderson, and (back to camera) Lieutenant I mili V Reard m. Coast Guard naval architect for the Petifit C est lest what improve ments the quartette were discussing when this proture was taken woron't available for release thin. No .rtheless, it is certain that whatever improvements or new designs may have been the subject of the conference, they will be made as the result of some University of American six mun under volume for "Life so ing outerment" Louisiness Board of the plained, "is not something that can he built to the design and then to zen right there. It must be changed and imprised is estudionimense of sea dictates." Whatever the changes. whatever the speed required by changing conditions, the men who sed our more tune shore man be sure that Gunderson's will deliver the

-From 'The Gunderson Gunner.

LOVELY

The many West Coast friends of Mrs. A. C. Burws will be interested in this photograph taken at the christening of a now submarine which slid down the ways at the Navy Yard at Portsmouth, New Hompshire, on June 25. Mrs. Burrows is the wife of Lieut. Commander Burrows, U. S. Navy, who was recently decorated by Admiral Nimitz for bravery in action in service at Pearl Harbor, Mrs. Burrows appears in our halftone with Rear Admiral Thomas Withers and with her maid of honor, Miss Joan Ashley, the daughter of Major and Mrs. H. H. Ashley of Las Angeles, who came or from the West Coast for



Northwest Marine Iron Works

Established in business less than three months ago, the Northwest Marine Iron Works is now located in modern shop facilities on the Williamette River at Portland, Oregon. The conveniently situated plant is at 2516 NW 29th Avenue.

Joseph Grebe is President, and has been active in Northwest shipbuilding and ship repair work since 1917. For twenty-three years Mr. Grebe was Marine Superintendent for Commercial Iron Works

George Grebe is Vice-President, and until formation of the new firm was mold loft superintendent in Commercial Iron Works ship repair and conversion department. George Grebe started as pattern maker apprentice six years ago and worked his way up through the various departments.

Northwest Marine Iron's organization has an experienced staff of superintendents, and foremen with many years of ship repair experience.

Secretary Treasurer is Harry Mendenhall, who was Production Manager in the ship repair and conversion department at Commercial Iron Works. Mendenhall has been active in ship repairs for the past 18 years

News of the Trade

George E. Swett Appointments

George E. Swett of the marine equipment firm of San Francisco which bears his name, took a bow at the August 4 meeting of the Mariners Club in congratulation for the further exploits of his indomitable son, Captain James Swett, named in recent dispatches for new combat successes with Tojo's bombers somewhere in the South Paeific.

George reports the return to his engineering staff of Herb L. South-

worth, popular sales and service man who was "loaned" to the W. S. A. for several voyages on some of our Pacific merchant vessels. Herb went out as chief and saw plenty of action, which he promises to tell us about "when this thing is over."

Another appointment by the George E. Swett Company is that of William E. Wallenberg, who will be well and favorably remembered around the Los Angeles districts, where he served as an official of Wilmington Transportation Company almost since the inauguration of that transportation firm.

ROBERT G. ALLEN

—a visitor to the Coast during July, attended the inauguration of the Harry W. Parsons Engineering Co., in San Francisco and appointed the firm as his West Coast distributors of Allenite.





HARRY W. PARSONS

Engineering Firm Opens West Coast Offices

The Harry W. Parsons Engineering Company is now going at "full steam" at the new Coast office opened at 260 California Street in San Francisco.

Inaugural day, observed by an informal "open-house," at which Harry Parsons and Bill Stevens were gracious hosts was held on Friday, July 23, in the firm's attractive new quarters, centrally located for the marine trade.

Headed by Harry W. Parsons, the engineering company will represent the following list of manufacturers:

Mar-Kem Products: Boiler compound and chemical cleaning of heat transfer units.

Allenite: Oxygen releasing compound for elimination of soot and slag. Ludeman Du-Al Valves.

Wager relief valves and smoke indicators.

Coffin pumps.

Parsons Refractory Corp.

Asbestolith Corp.

Harry Parsons enjoys a long and respected roll-call of friends throughout maritime America. His many years with Foster Wheeler Corporation have earned him the good wishes of ship men in all ports—with the emphasis on New Orleans, Washmgton, D. C., and his well-trod habitat of New York.

Harry is the man who envisioned the internationally influential Propeller Club of the United States and is credited as being in on "The borning" of the organization which to-

WM. H. STEVENS

day numbers close to one hundred. Ports around the world

The new San Franciso location will also be administered under the able guidance of William H. Stevens, long experienced in engineering lines around the Bay area. Bill Stevens has identified himself with shipbinking, repairing, operating and supply activities in the territory, and is expertly qualified to give helpful engineering service to the firm's new California customers.

Announcement

The Heintz Manufacturing Company, with plant and general offices in Philadelphia, has established at 116 New Montgomery Street in San Francisco an office with several engineers to give more effective service to its West Coast customers.





Modern appointments feature the impressive new offices of the Harry W. Parsons Engineering Co. at their San Francisco location on California Street.

Portland Marine Firm Has Able Helmsman

Saga of the Marine Electric Co. of Portland

This story of Damon J. Trout, president of Marine Electric Co. of Portland, Oregon, is taken from the company's house organ, "The Generator."

Adventure began for him after moving to Portland. Extremely interested to see what made ships tick, Damon gave up his school career at the sixth grade, and took to sea as an oiler and wiper on merchant ships running to the Orient.

In 1925 he left the sea to organize, with his friend C. B. Davis, the Davis & Trout Plumbing & Electrical Co., their automobile being both office and workshop. Two years later Mr. Davis sold out, and soon the firm name changed to "The Marine Electric Co.," then located at 149 Russell St. At the age of 25, Mr. Trout was specializing in all types of marine electrical equipment.

Business grew through the depression, although the going was not always easy. A need for expansion in 1933 saw him on the West Side near 4th & Everett St. At this time the Seattle branch and a San Francisco office were opened, the latter being maintained for several years until the long waterfront strike. During the depression, one of the largest jobs undertaken, with the aid of his competent staff, was the restoration of over 100 motors and generators on the freighter M. S. Feltre, which was sunk in a collision in the Columbia River.

The present site, 2121 N. W. Thurman St., was purchased in 1938 and includes shop facilities necessary for manufacturing numerous marine parts designed by Mr. Trout for merchant ships and for the Navy after the outbreak of the war. Since war was declared, this company were among the first to train and organize skilled men and women for production. Today they produce steam generators, de motors, wiring devices and accessories for ships built along the Gulf Coast, Eastern Coast, the Great Lakes and the Pacific Coast.

When we think of the activities of this organization it brings to mind the incident of the Italian ship Leme, sabotaged at the Portland dock in 1940. The Marine Electric Co. were called upon to repair the destruction -and they did-repairing motors, generators and wiring, in which armatures had been hacked to pieces, motor frames and housing mashed, phonograph needles carefully driven into the wire insulation, and gears jammed and broken, completely disabling the ship. Jobs like this and others are expertly repaired, and put back into service the ships which fight for victory.



R. B. POWERS
Production Manager, Marine Electric Co.

Mariners Meet

The Mariners Club of California staged one of their most successful events of many a year on Wednesday, August 4, devoting the program to the United States Coast Guard in celebration of the 153d birthday of this valiant branch of the service.

Honored guests introduced to a capacity audience by President Frank De Pue included:

Rear Admiral E. D. Jones, U.S. C.G.



DAMON J. TROUT

Commodore P. F. Roache, U.S. C.G.

Captain J. E. Sitka, U.S.C.G. Captain L. W. Perkins, U.S.C.G. Captain C. E. Sugden, U.S.C.G. Captain Edward Palmer, U.S.C.G. Captain C. C. McMillan, U.S.C.G.

Captain C. C. McMillan, U.S.C.G. Speaker of the day was Captain L. W. Perkins, U.S.C.G., who delivered a well-chosen talk giving the technical accounting of landings, attacks, and maneuvers by the American air, sea, and land forces during the early months of the Solomons invasion.

The recent appointment of Commodore P. F. Roache was commemorated by the Mariners and their guests and another high light of this day was the music arranged by Lieutenant-Commander Forster, with the Coast Guard's very own orchestra strumming tuneful and patriotic melodies.

U.S.C.G. Machinist Mate Melrose offered some excellent vocal solos and his pleasing voice won hearty plaudits.

Captain C. C. McMillan was credited for his fine assistance in arranging the program. "Cal" was right at home with his old shipmates in the club. He is one of our pioneer Mariners.

"The Horse Patrol Blues" was declaimed by Bern de Rochie of Pacific Marine Review and the sad plight of the lads at Half Moon Bay drew commiserating chuckles.

(Editor's Note: Should the author of this tearimpelling opus communicate with P.M.R. he will receive a nice check for the privilege of publishing the poem.)





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Standard Shipbuilding Launches First Wooden Tug



The all-wooden tug Power just before launching.

Standard Shipbuilding Corporation of Los Angeles Harbor, newest shipyard to take an important position in the nation's shipbuilding industry, saw its ways smoke for the first time on July 26 when Power, a 157-foot all-wooden tug, was launched amidst the sustained applause of nearly 4000 persons.

Power is the first coal-burning, steam-driven, wooden seagoing tug of World War II. It is one of 15 such tugs to be constructed by the shipyard for the U. S. Maritime Commission.

Sponsor was Mrs. G. Bruce Newby, wife of Regional Chief of Wood Ship Construction, U. S. Maritime Commission of Oakland. Matton of Honor was Mrs. Newby's daughter, Mrs. Carl H. Bartlett of Long Beach. J. Y Leveque, treasurer of Standard Shipbuilding Corporation, acted as master of ceremomes at the launching. The principal speakers were G. Bruce Newby and H. J. Summers, principal surveyor. American Bureau of Shipping, Southern California area. J. A. Casmas, president of Standard, spoke

a few words of congratulations to the entire employee roster of the yard, who were assembled to witness the signal event in the history of the firm.

The yard began construction barely nine months ago on its 25-acre yard on the main channel of the Los Angeles Harbor. Today it is a completely equipped yard, built for permanency, with a spacious two-story administration building, machine shop, 180-foot by 60-foot mold loft, woodworking shop, toolrooms, planing mills, pipe fitting yard, stores building, a first aid hospital station, docks facing the deep channel, and modern equipped employee rooms.

Officers and directors of the firm are: J. A. Cosmas, president; J. Y. Leveque, treasurer; George Logothetis, vice president; and J. M. Carras, industrial manager.

Among the executive personnel are the following six men, whose experience and abilities in their respective fields are counting for so much in the smooth working operations: D. H. (Dinty) Moore, director of sales division and public relations; George Bonner, construction superintendent of hulls; H. C. (Chris) Hansen, planning superintendent; John Marshall, personnel manager; Sydney W. Dubbins, in charge of ship repair and conversion; and J. B. Miles, controller. To Mr. Miles goes the credit for a highly efficient and financed accounting department. His organization prides itself on never having been late, even one hour, on pay day. He has had many years' experience as an executive accountant with the Government and in private industry.

Mr. Moore was brought into the organization at its formation, and his early activities were greatly responsible for the swiftness with which the necessary buildings were created and construction operations commenced. At the time of this building activity, he was working on priorities and

purchasing equipment for the shipyard, and was so successful in his work that the company laid its first keel on February 16, 1943. Not only was the first keel laid at that time, but carloads of engineering material, which were to enter into the physical construction of the tugs, were moving into the yard under his guidance. He is well known in the executive governmental departments in Washington, D. C., and has a wide acquaintance along the Pacific Coast

Mr. Bonner brought to Standard a world of experience gained through many years as a captain for all classes of vessels in all waters. He was a commander in the United States Navy during World War I in charge of various shipbuilding activities at Bremerton and Mare Island United States Navy Yards. More recently he has served as supervising inspector of ship construction for the Navy Department in the Los Angeles Harbor area.

To him goes much of the credit for turning out a hull that meets the entire approval of all Government agencies involved, which are highly complimentary about the workmanship going into the vessel. Too much credit cannot be given for the splendid success he has had in training carpenters to be shipwrights and actually getting production during the training period with practically no loss of time.

While he says that the difficult can be done immediately, he adds that the impossible is done in the same length of time, and the launching of the U.S.M.C. tug Power on the evening of July 26 is concrete evidence that he knows what he is talking about.

"Chris" Hansen was the first employee on the pay roll of the corporation, and when he joined the organization his office consisted of his own automobile on the site until

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temporary offices could be built.

Every high-ranking Government official who has visited the yard is high in the praise of the quality of workmanship, the beautiful lines and the complete absence of re-working ships' timbers that Chris laid out in the mold loft. There are upwards of 400,000 board feet of lumber and heavy timbers going into the construction of one of these tugs, and

some of the timbers are 14" square by 80 feet long. Mr. Hansen is truly doing a fine job in lofting the vessels.

Sitting in the highly responsible position of personnel manager, John Marshall has surrounded himself with an efficient staff who have selected a group of working men and women who are able to deliver the goods. Despite the man power short-

age, he has been able to do a real Houdini in providing the right man for the right place.

His eight years of experience with the Federal Government in an executive capacity and five years with the Ford Motor Company as advisor in the department of education have well fitted him for his difficult task.

In charge of the ship repair and conversion division of the yards we find Sydney W. Dubbins. For years he was chief engineer in charge of technical and development work for a major oil company, and until recently was one of the department heads of the engineering department, naval construction, for the Los Angeles Shipbuilding and Drydock Corporation. Because of his wide acquaintanceship and extended experience he is well qualified to put the "Repair division" "over the top." His hobby is designing special machinery, radio and sound projection.

While the first contracts cover wooden vessels, the yard is well equipped for steel vessel work, and negotiations are under way now covering such craft for the Government. The yard also has the approval of the War Shipping Administration for conversion and repair work on steel ships.

Contracts for 223 Liberty Ships

Contracts for the construction of 223 Liberty ships to be built by Gulf and East Coast shipyards were announced on July 26 by the United States Maritime Commission.

The New England Shipbuilding Corporation of South Portland, Maine, was awarded a contract to build 115 ships. A contract calling for the construction of 108 vessels was awarded to the Houston Shipbuilding Corporation of Houston, Texas.

Award of the contracts is in line with the Commission's emergency shipping program and will round out the Liberty ship schedule for these two yards.

A Seamen's Pool

Ensign A. W. Jenkins, recently appointed enrolling officer of the United States Maritime Service of



line of punches, shears, coping machines, forcing presses,

bulldozers, forming presses and related heavy machines.

the War Shipping Administration in Scattle, says that sleps comme from yards in the Puget Saund area will be manned from a pool of graduate seamen established in Scattle.

Ensign Jenkins has succeeded Ensign M. C. Hathaway, who has been transferred to Salt Lake City

The Maritime Service has leased a building in Main Street, near 14th Avenue S, formerly used as a Buddhist church, for the seamen's pool Sleeping accommodations and a mess for 150 men have been provided.

Hyear Chemical Company of Akron, Ohio, has assigned the Pacific Coast territory to D. C. Maddy of Akron, who will establish head quarters in Los Angeles.

Recent Calship Launchings

Some recent launchings at California Shipbuilding Corporation, Wilmington, California, were the following:

Charles Warfield, June 25: John James Ingalls, July 8; Billy Sunday, July 10; Granville Stuart, July 11; Zona Gale, July 12; Brand Whitlock, July 13; Robert G. Ingersoll, July 18: Ina Coolbrith, July 19.

All of these ships are 10,500 ton Liberty ships.

Army-Navy "E" Production Awards

Announcement has been made of the following Army Navy "E" Awards bestowed for excellence of production upon the following firms:

Gustin-Bacon Manufacturing Company, Kansas City, Missouri. Awarded on May 22.

The F. W. Wakefield Brass Co., Vermilion, Ohio. Awarded on June 26.

Resinous Products & Chemical Company, Philadelphia, Pa. Awarded on July 2 to Bridesburg Plant.





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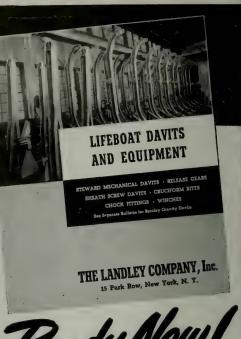
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A Ship May

Follow a Man

By Francis Dickie

MAN might follow a woman across the oceans of the world, and a woman might follow a man. If a ship follows a man across a sea and two oceans, if a ship follows a man and finds him—comes right to his very doorstep—that is what a newspaperman would call "news!"

This is, then, a "news" story of a ship. By a queer suggestive coincidence, her name is Syrene.

Which brings us face to face with that old unsolved mystery, argued pro and con since the time of the Ark: Are there destined paths for ships, as well as men?

Old sailors will answer yes, emphatically. They spend their lives on mighty deeps. In those far wastes intangible things lie brooding. Old sailors will tell you, with many a headshake of awe and wonder, and heartache too, of queer happenings to certain vessels across time and many seas.

This is the fantastic true history of the motor vessel Syrene. By times she was a craft for pleasure, by times a craft to aid men physically hurt, and to minister to their spiritual needs. And now she is engaged in another vital mission, also important in aiding man.

This is her history, and also how one man met her where the glittering Mediterranean washes that harbor of the rich, Cannes. Cannes, France, made by the English, and by English mitiative solely, into a pleasure resort famous around the world.

In that now seemingly far-off time, the year 1930, the Syrene often lay in the port of Cannes. Only thirteen year ago! France was free. France was happy. And many were the fine pleasure craft that put in to tie up



The fast motor vessel Syrene, recently added to forestry fire protection service in British Columbia, has had varied history, strangely connected with the life of one man, as told herein.

(Photo by Leonard Frank)

at the short cement wharf known as "Millionaires' Row." On a given day the ships that there lay, lined so close their buffers touched, represented commercially the might of Europe.

Peaceful things of beauty, among them the Syrene was, to one man's eyes at least, the finest of them all. She was small in comparison with most, her lines those of a smart schooner, a swift, staunch vessel, a craft of far greater general use, if the need arose, than the others built solely for pleasure. This the Syrene was not. She was what regular sailormen would have called a grand work boat, serving for the moment as a toy to a rich man's fancy. In 1930 the Syrene was owned by a Greek millionaire, who had founded a fortune in to-bacco.

A famous English lord once wittily said, yachts were designed for sinning. In any case, it is said, though this the writer cannot vouch for, never having met the gentleman personally, that the Greek millionaire made the Syrene live up to the saying while under his ownership.

The Syrene's hull, so much finer of line than the others, her figurehead of an alluring woman, drew this one particular man like a magnet. Whenever she was in harbor the man would go down and gaze wistfully upon her. He was a Canadian from the Pacific interested in forestry there. He knew and loved ships with an emotion that stirs strongly in the hearts of certain men. And as he gazed, he was filled with a vague, sorrow-filled longing, sorrowful because he knew it could never be granted to him to walk the deck of this ship he had come to love.

And so he looked upon the Syrene, and the vessel returned his gaze from the eyes of the beautiful figurehead symbolizing all the allure and fatal fascination of those women of ancient Greek myth, calling seductively to mariners to come to their arms. But it was the ship itself in this man's case that was the allure. She spoke to him of freedom of all the seas of of the world that on her deck might have been his. And though he knew this was denied him, the longing to at least have journeyed once upon her remained in his heart long after

he said goodbye to the Syrene and the brief holiday of case enjoyed at Cannes before returning to the sterner beauties of the Pacific Coast and his labors there. So the man crossed the Atlantic and the North American continent, and the Syrene continued for awhile to call at the port of Cannes.

In the year 1933, the British Columbia and Yukon Aid Society of England wished to show their approval and esteem of the work being done by the Columbia Coast Mission of British Columbia. Along the rugged, deeply indented coast of B C., where there is twelve miles of shoreline for every mile of distance. men and women lived widely scattered in the fir-clad rocky wilderness. Medical aid by swift ship to injured loggers, fishermen and expectant mothers was part of the work of the Columbia Coast Mission's motor vessels; and help to the destitute suffering loss from forest fire and other perils of the wilds.

Thus the English Church Aid Society decided to make a gift to the Columbia Coast Mission of a small, swift, roomy craft serviceable to the needs of the B. C. waters. Such a gift, it was felt, would always be a bond between the two countries. At the old, reliable and well-known ships' firm of Thornycroft, London, the Society's representative heard of the Syrene, sad, discarded plaything of its millionaire owner, at Cannes The Society bought her.

The Reverend John Antle, pioneer missionary in British Columbia Coast endeavors, and a rattling fine sailor if ever there was one, undertook to bring the Syrene from Cannes to London for the dedication ceremony and then "home" to British Columbia waters. He little dreamed the toil that lay before him when he sailed from Cannes. The Syrene's engines were in incredibly bad condition.

For weeks the new master and his crew of four chipped rust, and cleaned and oiled. And actually by a miracle they got the engines to carry them as far as Gibraltar. But here at the Naval Dockyard, where the finest shipwork in the world has been done, two new Widdop diesel engines were installed. With new spring in her stride, the Syrene sailed for London, the Naval yardsmen turning out to bid her safe voyage. After calling briefly at Lisbon, the Syrene all newly resplendent, and her sinning far be hind her, came to London for the ceremony. Right beneath the shadow

of Big Ben, the vessel was dedicated, on Friday, June 16, 1933. The then Bishop of London, Winnington Ingram, presided. Among the many prominent Canadians present was Patrick Maitland, later to become at torney general of the Province.

With a crew of four, the Syrcne braved the Atlantic, the longest voy age of her career until then, going the outhern route to Colon, and then through the Canal to the Pacific and on to Vancouver. For three years, until 1936, the vessel served as a Mission ship up and down the British Columbia coast, an intricate and difficult island-dotted network of waters known as the "Inland-Passage," The Syrene then changed hands once more. The A. R. Williams Machinery Company of Vancouver acquired her. In turn she was soon purchased by an American millionaire. Now once again the Syrene was back in familiar hands. She was lavishly re-modeled. Two 85-bhp Ruston full diesels were installed, with high pressure air tanks giving instant starting. A striking contrast to the weird rust ed outmoded engines by which she made passage from Cannes to Gibraltar under the magic handling of John Antle.

In 1942 the British Columbia For estry Department was in great need of a motor vessel to replace the P. Z. Caverhill, sunk in a collision with a C. P. R. steamer. The Provincial Government's allotment of funds covering all branches for forestry protection work, in which staunch and fast motor vessels play a tremendous part, has always been below the complete needs of the foresters. And certainly in their wildest dreams there never were funds to meet the original price of the Syrene. But for once luck was with the foresters. The Syrene, offered for one-sixth of her actual cost, exactly filled the requirements. She was not too large, just ably fitted to navigate easily and quickly the narrow passages and winding sea-lanes between a thousand islands of the difficult waters of the Inland Passage.

In the winter of 1943, under the new ownership, she was on an inspection cruise one hundred miles north of Vancouver. A southeasterly storm had blown throughout the day. As the afternoon waned, the storm died with the suddenness peculiar to such in this region. The cloud masses dispersed. Above the jagged peaks of the coast range a big yellow moon shot up with a queer sudden-

ness of reality actually imitating a stage setting. Upon the now flat sea the full moon laid a golden moon path.

The hour was nearing nine when a man came out from his office in the big logging camp at tidewater and stro'led down to the end of the long wharf high on piles above the water. He stood staring at the moon path reaching from the end of a long sand spit jutting far out from a farther bay a quarter mile away. The moon path narrowed beneath his feet. Abruptly the man tensed. He shook his head as if to clear his vision. Yet the sight did not vanish. His head strained a little forward, and in his eyes was the wonder of one looking upon a sight not of earth. For there, rounding the headland, and for the moment squarely against the brillliance of the moon path and the moon, stood silhouetted in all her glory his lost love, his dream ship. Thirteen years had passed, but her memory was so etched upon his mind that instantly he knew her.

With graceful turn the Syrene swung into the moon path and came floating down, straight to where he stood. Still he did not believe. Dazed, held spellbound, he remained until the vessel docked. Her bow line came thumping on the wharf at his feet. A friendly voice called: "Will you make her fast?"

Only when the forester a moment later sprang upon the wharf did the man know this was reality. With eager, excited eyes he gazed once more, and now believing, at close range upon the Syrene; saw her in the moonlight grandeur, backgrounded by high, snowy peaks, surrounded by the dark firs and hemlock of B. C., as once he had looked upon her amid the civilized magnificance of Cannes.

Separated by a sea and two oceans, and passing years though they had been, once more they were together. Across the Mediterranean from Cannes to Gibraltar, 800 miles; across the Atlantic from London to Colon, 4763 miles; from Colon to Vancouver on the Pacific, 4089 miles; from Vancouver to this lonely spot a hundred miles up the B. C. coast—9752 miles the Syrene had come to stop at his very feet—reality beyond the wildest dreams of any creator of fiction!

And when the man told his story to the forestry officer, his wish at last came true: he was taken on a little cruise, as he had dreamed without hope of realization thirteen years before on the other side of the world.



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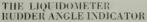


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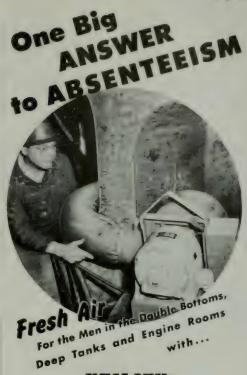
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In cost, this metal lies in the range between the high and the lower grade babbitts. In some properties it is much superior to, and in every other essential characteristic it is equal to, the highest grade babbitt.

Bondrat has the following characteristics:

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A compression strength at normal temperature of 25,600 psi

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A bending strength of 17,000 to 20,000 psi.

A frictional coefficient of 0.003

A melting point of 680° F.

A solidification point of 464° F. A Brinell hardness of 16 at 212° F.

This new bearing metal retains its hardness at the higher temperature levels to a much greater degree than does the best tin base babbitt, and its sliding properties surpass those of the best babbitts. Under identical working conditions, the temperature of bearings cast with Bondrat are found to be lower than those of bearings cast with the best babbitt.

This metal was first introduced in Europe and has gained widespread use in many industries and in the merchant marine and the Navy. It is similar in structure to high-grade tin babbitts, having hard alloys, finely and uniformly distributed throughout a softer basic material. It is protected in name and composition by registration and patent.

Bondrat is distributed to the marine and other industries on the Pacific Coast by the Moore Machinery Co. of San Francisco and Los Angeles.

35-Ton Hydraulic Bender

A new hydraulic bender, designed for pipe bending, straightening, pressing and miscellaneous forming of light structural and welded shapes, has just been announced. It is for light use in general metal-working plants and has the following specifications:

Advance and pressing speeds, 40" per min. Return speed, 130" per min. Maximum operating pressure, 2,000 lbs. per sq. in. Table—front to back, 42". Table—right to left, 72".

The ram, 12" wide by 9' high, is provided with T slots for mounting dies. Table is provided with 26 holes for location of 4" diameter bending pins in various positions on the table to facilitate bending and straightening of odd shapes.

This type of press is built in capacities from 35 tons to 200 tons by the Beatty Machine & Mfg. Company, Hammond, Indiana, builders of heavy hydraulic and mechanical metal-working machinery.

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Process Welds Metal And Wood

A method of joining thin sheets of stainless steel or aluminum to ply wood with a bond stronger than the materials themselves has been recently announced by The U.S. Stoneware Company, Akron, Ohio, manufacturers of Tygon flexible plastics and corrosion-resistant materials

The new method, known as the Reanite Bonding Process, is already in use for vital war applications and is expected to find numerous peace time uses. This process may be used to bond metal to metal, rubber, synthetic rubber, plastics, leather or wood to metal, or to each other Almost any metal may be joined: iron.

of all statistics of the cross of all minum, aluminum alles, pper transfer brees been filled in the most of false does be the filled in the cross of states of the minute of the proof of the fill of the fill of the materials of between the bond. The most is controlly unaffected by fresh controlly unaffected by fresh or salt water, and has extreme to sistance to vibration langue.

The process is simple in application. The surfaces to be joined are brushed, sprayed or dipped with Reanite. After drying for an hour, mild heat and pressure are applied. The bond develops its maximum strength at room temperature but is fully effective over a temperature range of from 40° F, to 800° F.

While Reanite is formulated through cyclic modifications of materials high on the entited list, it is available for immediate shipment for essential end-uses. It is shipped in gallon, 5-gallon, or 55 gallon containers

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An Ideal Marine Range

A new marine electric range, which combines operating convenience with ease of maintenance and service, is announced by Electromaster, Inc., of Detroit. Identified as Marine Master model HM321-A, it features separate installation of fuses and relays in a compact box for instant accessibility.

The range consists of a heavy duty cooking top, built to Navy Department specifications, together with a large prefabricated, double shell oven with rugged, springless catch. The switches and thermostat control are mounted on the range itself, making it unnecessary to reach over steaming kettles to operate them. Extra heavy insulation contributes to oven efficiency.

By mounting the fuse box on the wall above or in any other unused space, practically all essential servicing may be performed without dismantling the range in any way. Removal of two screws permits entry into the box. All connections are screw type.

An Automatic Fire Alarm

An automatic alarm system that gives visual and audible warnings of fires aboard ship has been perfected by the Marine division of Bendix Aviation Corporation.

This system is equipped with thermostats that react instantly to any abnormal rate of increase in temperature. Automatically a fixed alarm mechanism flashes a warning to a fire lamp, fire bell and fire flag, all mounted on a central annunciator panel. It can be installed to give such warning in from 2 to 120 select-

ed "zones," making it adaptable for any craft from a PT boat to a 35,000ton battleship. The system also is electrically supervised to check and report on such conditions as shortcircuited thermostat lines, power lines and fire bells.

Printing With Paint

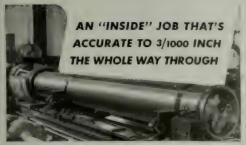
Printing with paint on a quantity production basis has become an established fact and the story of how it is done is mingled with the crash of bombs and air raids.

For many years paint manufacturers and others in this country have been obliged to present their color samples in folders with paper color chips mounted in them. In England, Jensen & Nicholson, Limited, of London, one of the largest paint and varnish concerns in the British Empire, developed mechanical equipment for the production of color cards by a method known as the McCorquodale process. Through this process 72 colors of paint pigment can be reproduced in a single impression, and gloss, semi-gloss and flat colors can be reproduced simultaneously.

When the owners of this process sought to introduce it in America, they approached the Devoe & Raynolds Company, Inc., who negotiated with Western Printing and Lithographing Company, Racine, Wis., and an agreement was reached for that company to accept the exclusive agency, while Devoe & Raynolds acquired the right, on a royalty basis, to manufacture the printing paints on the British formulas, which are a carefully guarded secret.

Then came the bombs. While the mechanical equipment was being produced in England for shipment here, the plant war bombed nine times. True to the British tradition, the work went on and in due course the equipment was shipped and set up. The experimental period is now passed, and the Western Printing and Lithographing Company is prepared to apply the new process to many kinds of work.

In addition to reproducing the customary paint chips, through special equipment and facilities, the machine is also capable of reproducing irregular shape swatches of various colors laid promiscuously in any shape or position on a sheet 20 x 30 inches.



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Because Viking is engaged in important Wartime construction for the U. S. Marine Corps, many valued civilian customers find it impossible to get Viking Rotary Pumps at all, or to get them only after consider-

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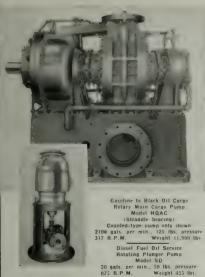


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The new retainer not only has technical advantages, but is also said to be more permanent than the former type of retainer, according to the company. In addition, as it is now being manufactured, it uses less critical material.

First Birthday of Bay Area Maritime Committee

11. 44 3 10 11. 11.

Participation is encouraged at the monthly as well as subcommittee meetings by those who have an interest in subjects being discussed Frequently the number of guests exceeds those of committee members in attendance. At the meeting in Oakland on July 20 there were 25 guests

The committee has in turn been encouraged by the participation of numerous officials of the Army, Navy and various Federal agencies, particularly the War Shipping Administration, Office of Defense Transportation, Maritime Commission, Army District Transportation Office and Lend Lease Administration.

At one recent meeting, Admiral Greenslade, Commandant of the Twelfth Naval District, detailed two officers, Captains Carl A. Carlson, Public Works Director, and Harvey Delano, District Planning Officer, to inform the committee as to the Navy's interest in Bay area planning.

The committee presents to Federal agencies the opportunity of discussing problems and projects on an area basis and with an area viewpoint.

Projects

As its name implies, the majority of topics dealt with have been of a maritime character Furthermore, they have been, for the greater part, of such nature as to warrant current attention, and because of their effect on the area's war effort. There has been very little post-war planning thus far.

The first project undertaken was a survey as to what auxiliary wharves were available or should be provided in the event of serious damage by enemy action or sabotage to the concentration of wharves at San Francisco, Oakland and Alameda. Subsequently, recommendations were drawn up as to what was determined as necessary to enable the area to handle the expected greatly increased offshore cargo movements. They dealt principally with proper use of piers and port facilities. These same

recommender is the committee has learned as a latar embodied in an official is at all the being carried out by the Covernment regimes concerned.

Other procests now being developed are a building program for barges to be used to the area so as to make possible a greater cargo movement, the establishment of a foreign trade zone, the development of a large international airport and the prevention of loss of title to redeem d, submerged and tidelands his to rederal legislation or condemnation.

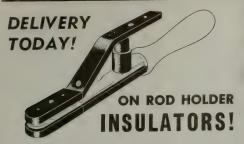
Members of the committee have recommended an interest in subjects in addition to those of a meritime nature. For this reason the committee is expected to give further attention to industrial development, highways, the revival of lumber exports and regional planning.



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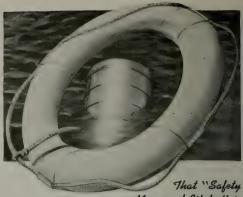
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Pacific IMARINE REVIEW

Postwar Planning for Maritime Commission

The U. S. Maritime Commission has formally announced the formation of a "Postwar Planning Committee to develop plans for the American Shipping Industry after the War," pursuant to its statutory responsibility for making "various surveys to determine the shipping requirements of the United States and to assure the maintenance of a Merchant Marine adequate to the needs of commerce and defense." The current survey is to provide a broad background of information on which to base plans for the immediate postwar period and to formulate a longrange program.

This Postwar Planning Committee is headed by Commissioner Howard L. Vickery, serving as Chairman, and Commisioner Thomas M. Woodward, serving as Co-chairman. Other members of the Committee are:

From the Maritime Commission: R. E. Anderson, Director, Division of Finance; James L. Bates, Director, Technical Division; Henry L. Deimel, Jr., Director, Division of Economics and Statistics; Ralph H. Hallett, Director, Division of Regulation; Gerald H. Helmbold, Director, Division of Operations and Traffic; Harvey Klemmer, Economic Adviser to the Commission; Donald E. Lawrence, Chief Examiner of the Examining Division; Huntington T. Morse, Assistant to the Chairman; Daniel S. Ring, Director, Division of Shipyard Labor Relations; S. Duvall Schell, Executive Director; and Wade H. Skinner, General Counsel.

From the War Shipping Administration: F. M. Darr, Director of Traffic: Telfair Knight, Assistant Deputy Administrator for Training; William Radner, General Counsel; David F. Scoll, Assistant to the Administrator. Mr. Klemmer is serving as Executive Secretary of the Committee. Walston S. Brown, Assistant General Counsel for the Commission, is serving as Counsel.

The Commission has also designated various subcommittees to deal with specific aspects of the postwar problem. The number of committees may be expanded as the survey progresses. Subcommittees thus far established, with chairmen, follow: In-

dustry Cooperation, Commissioner Windward Liber Cooperation, Mr Ring; International and Interdepart mental Relations, Mr Morse, Trade Routes and Port Fuelation, Mr Dairi, Commerce and Footman, Mr Defined, Shipping and National Detense, Mr Morse; Shipping Finance and Insurance, R. F. Anderson; Conference and Rate Structures, Mr Hallett, Shipping and Overseas Air Transport, Mr. Anderson, Domestic Shipping, Mr. Helmbold, Tankers, Mr Bates; Merchant Marine Personnel, Mr Kinght; Law and Legislation, Mr. Skinner.

This is a very strong committee, and it should produce a useful survey. It is notable, however, that the committee and its sub-committees are one hundred per cent Maritime Commission, and that means, of course, that in all plans formulated by this committee, the solution of Commission problems and W.S.A. problems will have priority over private shipping industry problems.

It is, therefore, incumbent on the various bodies which represent the American shipping industry to set up an equally strong joint committee to survey the same field and be ready to place before the Commission findings and plans representing the viewpoint of a privately-owned, privately-operated American Merchant Marine.

Lend Lease of American Merchant Ships

A great deal of criticism has been generated by the announcement of the W.S.A. late in July that U. S. built ships would be bare boat chartered to members of the United Nations, which have excess pools of idle seamen due to war losses in their own merchant fleets.

Principal charterers under this plan are: Britain, which had received five, and beginning in August would receive 15 to 20 a month for ten months; Norway, which had already received 80,000 deadweight tons; Greece; and Holland. Title to all ships remains in the United States, and the ships will be operated under the flag and by the citizens of the nation to which allocated.

All of this is pursuant to an agreement between President Roosevelt and Prime Minister Churchill made shortly after Pearl Harbor, whereby American shipyards were to supply the bulk of the merchant tonnage for the war and the bulk of British shipyards' capacity was to be devoted to producing warships.

The arrangement is purely for efficiency in the carrying on of the war, and is for the duration only. It need not, therefore, cause any concern to either shipowners, union labor, or dyed-in-the-wool isolationists.

The great body of criticism raised against this action in many quarters proves that there is great need of merchant marine education in this

country to prevent our making the same mistakes we made in handling our great fleet of merchant vessels after the last war.

The great bulk of the maritime cargo-carrying trade of the world during the historically recent past has been carried by the ships of the nations to whom we are now "bare-hoating" these Liberty ships. Our own cargo liner trade depends on these world trade movements for the bulk of its cargoes. We, as a nation. have never been, nor are we now, interested in tramp cargoes or in forcign coastwise cargo collecting services. The Liberty ship is somewhat suitable for that type of work. The Liberty ship is not suitable for cargo liner competition, nor is she a good risk for laying up for future use, being rather thin in the shell to withstand much pitting or corrosion.

Therefore, when the war is over, we should be happy to sell as many of our "Liberty's" as practicable to the shipowners of the world who can use that type of cargo carrier. However, the storm of protest over the "bare-boating" of these ships to our allies, even for war purposes, indicates that if the war were to end tomorrow there would be no possibility of initiating a public policy for the orderly disposal of our surplus tonnage in the markets of the world.

Even if we were determined to maintain a huge pool of surplus merchant tonnage, it would be far more economical, in the long view of postwar planning, to scrap all our "Liberty" ships and build up a pool of vessels designed for a speed and economy more in line with that which is likely to be prevalent 25 years hence.

American Shipbuilding In 1944

After considerable discussion pro and con with other Government agencies, the Maritime Commission has confirmed an announcement that the 1944 merchant shipbuilding program for United States yards will aim at practically the same total tonnage being realized in 1943, or 20,000,000 deadweight-ton capacity composed of from 1800 to 2000 vessels.

Of the 411 new, fast "Victory" steamers, for which contracts have

already been let by the Maritime Commission, 92 have been dropped, leaving 319 of these 15-knot cargo carriers under contract. Keel layings for these vessels will begin in December, and all are scheduled for delivery during 1944.

Upwards of 180 of the standard fast C-types of cargo carriers are scheduled for delivery in 1944, and these, with their sisters already delivered, will form the backbone of America's modern postwar dry cargo fleet.

Several hundred tankers will be among the 1944 deliveries, but, as now, the bulk of the ships produced will be "Liberty" steamers.

Add to this huge construction program the equally great building plans of the U. S. Navy, the U. S. Army, the U. S. Health Department, and the U. S. Coast Guard, and it becomes apparent that every shipyard and every machine shop in the United States of America will be very busy for the duration.

The Ship's Doctor

Ships sailing under the control of the War Shipping Administration which do not have ship's doctors aboard henceforth will be stocked with a revised minimum standard supply of drugs and medical supplies prescribed by the United States Public Health Service.

The revised edition of "Ship's Medicine Chest and First Aid at Sea," published by the United States Public Health Service, lists 99 standard articles and how to use them. The list includes a wide variety of recognized medical supplies. Fortysix of the prescribed items, such as phenobarbital, sulfanilamide and sulfathiazole, are listed as "drugs," while the remainder, such as adhesive plaster, ice bags, hemostats and tongue depressors, are under the "surgical and general supplies" category.

Although War Shipping Administration-operated ships almost always travel in convoy, which always affords doctors, the Administration is now in the midst of a training program which will eventually provide pharmacist's mates aboard all merchant ships. In addition, all officers are required to pass an extensive first aid course.

Items listed as standard are considered minimum for the protection of the crew. Agents will be permitted to add additional items which they may consider advisable.

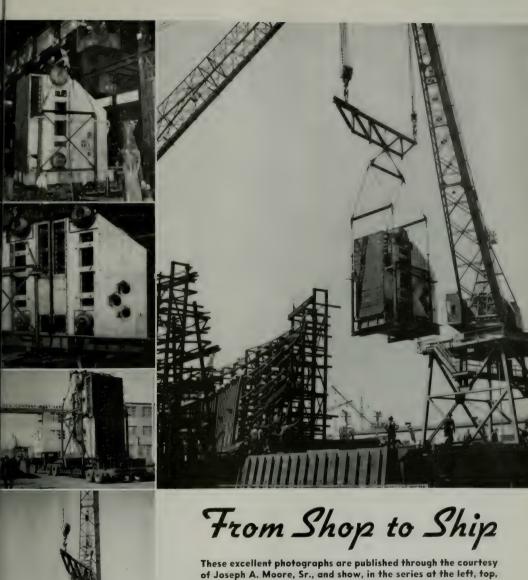
Unemployment Insurance For Seamen

At present, two drafts for bills to provide unemployment insurance for seamen are up for consideration and hearings before the Committee of Merchant Marine and Fisheries of the House of Representatives. These bills were prepared by a sub-committee on this question, and are known as Committee Print No. 1 and Committee Print No. 3.

Early this year, W. S. A. appointed Dr. Herman A. Gray, Chairman of the Advisory Council of the New York Unemployment Commission, to draft a new bill on this subject!

Committee Prints No. 1 and No. 3 both contain provisions which are of vital, fundamental concern to the shipping industry. Both delegate a large part of the administration of unemployment insurance and the eligibility of seamen for benefit payments to union labor organizations acting through their marine hiring halls. This arises through provisions in each print which permit and require members of marine labor unions, when applying for benefits, to register for employment at their respective union hiring halls instead of public employment offices. Thus all control over offers of suitable reemployment, the determination of availability for work and of willingness to work, would be under the administrative control of labor leaders instead of under Federal appointed public officials.

This is directly contrary to the universal American concept of the administration of all public law, and no precedent exists for such delegation of administrative responsibility. Since we are apparently on the eve of a great national plan for universal social security, it behooves us to be very careful in this matter. Eternal vigilance is the price of liberty.

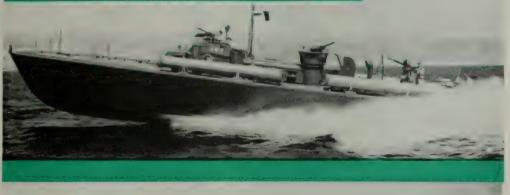


These excellent photographs are published through the courtesy of Joseph A. Moore, Sr., and show, in the series at the left, top, a Foster Wheeler boiler weighing 52 tons fully assembled in the boiler shop being hoisted by a 60-ton boiler shop crane for installation in Hull 254 (MC 1167) C-2 type freighter on the ways under construction for the U. S. Maritime Commission by the Moore Dry Dock Co., Oakland, California. Second from the top are shown two of the Foster Wheeler boilers completely assembled in the boiler shop ready for installation in the hull. The third illustration shows one of the boilers entering West Yard for installation. At the bottom is shown a boiler being installed in the hull. The large illustration shows it in midair on its way into the hull.



"Expendable"

Harbor Boat Building Company Makes
Notable Record Building Fighting Craft







present concern at Terminal Island. Until the outbreak of World War II the firm had built hundreds of boats of all classes in the pleasure craft, workboat and commercial fishing boat division.

Harbor Boat takes great pleasure and pride in its accomplishments for the war program, claiming, "We have a record of launchings that is second to none on the West Coast. We are producing more different kinds of U. S. Navy 'fighting boats,' and more of each kind, than are produced by any other yard of our size and class."

To back up this statement, the following imposing record of "firsts" is presented:

First in Southern California to

commence Naval construction for the present defense program (1940).

First on the Pacific Coast to launch and complete a U. S. Navy bombing target boat.

First on the Pacific Coast to launch and complete a large U. S. Navy motor mine sweeper.

First on the Pacific Coast to launch a U. S. Navy submarine chaser.

First on the Pacific Coast to launch a motor torpedo boat.

First boat or shipyard in Los Angeles County to receive the Navy "E" for excellence in production.

First boat or shipyard in Los Angeles County to receive the Minute Man and Bull's eye Flag for pay roll bond deduction achievement.

The recent record of eight launchings in a 36-day period was made on two types of U. S. Navy mine sweepers, the YMS boats. Starting on May 1, No. 361 was launched, followed rapidly by No. 362 and No. 363 on May 4 and 5. On May 19 another (No. 364) of the same series slid into the channel, to be followed by No. 365 on May 20. On May 29 the first of a new type mine sweeper fleet was launched, and No. 366 and No. 367, of the former type, were launched on June 6 and June 7 respectively.

We cannot, for obvious reasons, describe in detail the Navy fighting craft produced at this yard, but we can say that they are amazingly complicated in their machinery and ordnance installations, and amazingly efficient in their performance. They are built to U. S. Navy design and specifications under the most rigid U. S. Navy inspection.

Like most war industries, the company has had to expand while producing. In fact, the yard is still improving, replacing old buildings and machines with new, and is now one of the most modern boatyards on the Pacific Coast. Thus, as of May 1, on starting its record launchings of Navy mine sweepers, it officially opened a new modern administration building.

The yard now has a greatly enlarged machine shop equipped with everything necessary to take care of the installation, maintenance and repair of the propulsion and auxiliary machinery, of all types of pleasure craft, and workboats up to the largest commercial fishing vessels. Several of the machinists in the shop are old experienced hands—veterans in the employ of this firm.

The launching ways, both open and covered, have been enlarged and multiplied. The marine railway dock has been modernized and enlarged and new outfitting docks built.

A large machinery warehouse has been added to the buildings. The joiner shop has been expanded and much new and modern woodworking machinery is installed.

In all departments, the yard has a very fine nucleus of experienced employees who have been with this firm for many years. The enthusiastic loyalty and patriotism of these men has been communicated to the inexperienced new recruits in the boatbuilding industry, furnishing a well-rounded force of ship joiners, caulkers, painters, shipsmiths, riggers, marine machinists, pipefitters, sheetmetal workers, and all the other crafts that are responsible for the finished ship.

That these records for speedy construction have been made with no sacrifice of quality is attested by the performance of Harbor Boat craft at sea and on the fighting fronts of the Pacific.

Top: J. D. Hamilton, secretarytreasurer of Harbor Boat Building Co., presents the new Army-Navy "E" pin with two added stars to George Reilly, the oldest employee of the company, who has served twenty-three years.

Center: Guests at launching of U. S. Navy mine sweeper and Third Army-Novy "E" award to Harbor Boat Building Co. Left to right: Woody Hattick, Miss Dorothy Harvey, sponsor; John Rados, president of the company; Capt. Schuyler F. Heim, Commondant; J. D. Hamilton, secretary-treasurer; and the sponsor's sister, Matron of Honor.

Lower right: Raising the Army-Navy "E" flag after presentation of third award at launching of U. S. Navy mine sweeper.

Below: Mrs. Fred Howser, wife of Los Angeles district attorney, christening one of the latest highspeed Naval vessels built by the company.







An Animated Shipbuilding Diorama

AN ANIMATED

diorama, graphically showing the operations of wartime ship repair and construction, was formally opened to the public on July 20 by the Todd Shipyards Corporation at the Museum of Science and Industry, RCA Building, New York.

This newest display unveiled at the Museum is most interesting. It portrays round-the-clock operations which take place in modern shipyards. On the right side is a ship repair yard showing both floating and graving repair docks, and the many different kinds of shops needed for ship repair work, as well as the giant cranes, mobile cranes, trucks, railroad cars and other facilities. The scene is set on the waterfront of a large port, where repair yards are always located, and in the background on both sides extend dwellings, office buildings, skyscrapers and other structures.

The left side depicts a shipbuilding yard with ways stretching from the

middle ground almost to the horizon. In the center of this group a ship is being launched, shown just as she hits the water.

In the left foreground is a troop transport with troops in full marching order going up the gangplank, while a troop train shuttles back and forth on a railroad siding. In the immediate foreground on the left, a cargo carrier is loading the supplies which will accompany the troops to their destination.

In the harbor are shown the many forms of activity found in the road-stead of a busy port—ferries, car-floats, tugs, barges and other vessels—all of them dominated by a hospital ship in the middle distance.

Technically, this diorama has a one-minute cycle—that is, by means of automatic controls it will portray a daylight scene for a minute, then it gradually fades and darkness of night settles over the scene, lights appear in the various buildings and on the ships—a lighthouse on the far coast begins flashing signals and a channel buoy begins to flicker. Gradually the

darkness gives way to dawn, which very quickly grows into full sunlight.

The ship repair yard scene is conceded to be a very clear presentation of such a plant. Specifically it shows various types of ships in floating and graving drydocks having different types of work done on them. At the outfitting piers are shown a submarine and giant cargo carrier ready to go back into service, while tugs are maneuvering a damaged transport into position to move into drydock. A crippled oil tanker is shown in one of the graving docks, while a passenger liner is being converted into a combat transport in one of the floating docks.

A miniature exhibit to the right of the main display demonstrates how a graving dock works. A vessel is shown just entering the dock, with the gate still partially open and the ship riding the water. This scene fades out and the ship is shown resting on the blocks with the water pumped out of the dock, and everything is ready for the Todd repairmen to go to work.



A close-up of the left side of the diorama, newest exhibit in the Museum of Science and Industry, New York City.
This scene portrays a shipbuilding yard in the middle ground, from which a ship is just being launched. At an adjoining pler troops embark for service abroad, while in the foreground a cargo vessel is being loaded with their supplies.

21

The right side of the diorama. This scene shows a ship repair yard which, in part, is a faithful reproduction of one of the Todd repair yards. Floating and graving docks are clearly shown, as well as the glant cranes and many shops necessary for the work. War-damaged ships are shown being made ready for re-entry into service.





A shipyard welder at work at California Shipbuilding Corporation, Terminal Island, Lo Angeles. The daily work of many shipyard trades sometimes involves conditions requiring great care to conserve the health of the worker.

What are the warning signals about health?

Has any region in this warring world, similar to the Bay area, been through the problems we face? What did they do about it?

Can we profit by their experience? With these questions as our outline, we shall first estimate our coming situation. To begin with, ship-

yard health is inextricably tied up

The opinions or assertions contained herein are the private ones of the writer and are not to be construed as official, or as reflecting the views of the Navy Department or the naval service at large.

(The author is Instr. for in Problems of Ship building Supervision Senterd University Wi Training Courses (with public health, as crowded workers shuttel back and forth to work at all yards from every point of the compass. Shipyard illness will be spread to the population, and vice versa.

Epidemics have a simple formula: bacteria; a carrier; and a favorable cultural breeding ground promoted by dislocation of normal living, such as congestion, malnutrition, poor housing, fatigue and lowered resistance. Will these factors increase?

When German resistance crumbles there will be an increased rush of power and personnel to this coast. The Bay area with its outstanding harbor facilities will get the brunt of it.

The Coming

A fringe of but ten million population on the coast is not relatively large enough to absorb abnormal increases.

The Pacific Problem

The Pacific campaign is very different from the Atlantic. The distance from here to South Asia is three times as far as from New York harbor to Europe. The Japanese dislike us far more than the Germans do, and have weapons of race inequalities to use against us. The struggle may be three times as long. We have no powerful ally on the way like England on the way to Europe. We may never have enough ships.

In this area, already the largest shipbuilding center in the entire world, we shall have to build more ships, convert more ships from short to long treks, and repair more ships. But not with sick workers.

The Federal Government is centered at the opposite end of the nation. As yet its future indispensable responsibility and authority is not exerted in preparing for health security. General DeWitt exerted positive action and authority for blackout against an external enemy. The day may come when similar effort organized against our internal disease enemies will be even more vital.

The influx of industrial workers for auxiliary industries, the strain on all upkeep services, the increase of military personnel and Government agencies, the hordes of visiting relatives—all these add to the risks involved.

As these strains accelerate, our overworked doctors, with their ranks to be thinned even more for increasing military forces and returning casualties, cannot be augmented overnight from a profession that requires several years of training before practice.

Pacific Coast Advantages

Against all this, it has been observed that we have a generally high

Fight for Shipyard Health

by Lt.-Comdr. Stewart F. Bryant, U. S. N. (Ret.)

standard of sanitation, a splendid public health service, and did possess at least a high and fortunate standard of living.

In balancing the bad and the good, it looks as though we can pull through if we act in time. If we do not, we may have a third of our ship-yard workers out of commission during some coming winter season, where every hour of illness will be a gift to the enemy and increased sacrifice for our fighting men.

What Britain Did

So next we shall go to Great Britain to see from official reports what their people have been through and what they did about it. The Clyde basin shipbuilding area offers a comparable lesson for our problems.

Britain in general had problems spared to us—bombing, blackouts more tragic than our rehearsals, congested shelter life, ventilation hazards, sleep losses, food shortages, civilian war casualties, evacuations, migrations, resettlement of children and aged, disturbed and broken home life on a large scale, and great strains on the entire population from the increased mechanization of war. These handicaps applied in particular to their shipbuilding areas where congestion was usually at its worst.

Epidemic Prevention

In contagious diseases, one of the early threats was that of typhus from the continent. Drastic precautions were taken. Every seaport, every airport, was covered by teams for expert diagnosis against the louse-

Women burners at Todd Erie Basin Dry Docks, Brooklyn, display various types of inhalators they use when burning metal that might produce noxious fumes. borne typhus. Local authorities were given full intelligence and instructions as to how to deal with it. These teams were on the alert to pounce upon the first indication. To this year not a single case got the upper hand. Nor a case of plague.

By April of this year some sixty cases of malaria were reported at a seaman's hospital, mostly subtertian, infected in Sierra Leone. Many cases were caused by relapse from a return to a cold climate. Mosquito species were branded, exceptional precautions were taken, orders were sent out to all centers for prevention, diagnosis and treatment. Effective measures were taken to prevent mosquito breeding in emergency firefighting tanks, and the orders were followed up.

The influenza period was passed in March. Plain good nutrition was held as the outstanding safeguard. Pneumonia had a moderate increase up to last year. Tuberculosis, with its usual war increase, seemed to attack mostly the temale group from 18 to 25, cause unknown. Increase in deaths per year has been about 500. In suppression pasteurized milk, slum clearance, early examination and X-ray were enforced. An energetic campaign of miniature radiography was put in action for masses of industrial workers. With ordinary cinema film, about a hundred tiny X-rays could be taken per hour. To segregate patients, the Government provided special maintenance allowances for treatment while the worker was off the job.

At a seaport, an infected ship presented the community with a case of smallpox. The local medical officer rounded up two known contacts, both suspects, and after vaccinating a cordon of 30,000, prevented the spread of the disease.

Typhoid was a great danger from bombed and broken water mains. There are about 8000 miles of these mains in London. One of these, four feet in diameter, was bombed eleven times. Thorough chlorine treatment of water prevented any large outbreak.

Diphtheria killed more children than German bombs. Protection might have been found in complete immunization.

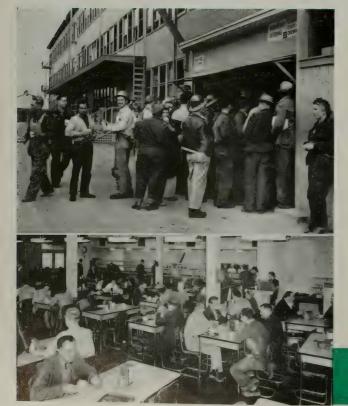
There were quite a few outbreaks of para-typhoid traced to bakery confections.

Industrial production was quite badly held back for a while from scabies (itch). Action was taken by (Page 71, please)





Marinship Faces the Food Problem



TARTING with the premise that workers in the major industries of America, school children and others, have from time immemorial been accustomed to having their heavy, hot meal at home and take with them to work a light lunch, usually consisting of sandwiches, fruit and a liquid, such as coffee, tea or milk, Marinship believes that there is no reason to change the customary practice. It was consequently felt that a supplement to the lunch or a substitute for such a lunch, in case one is not carried by the worker, were the two things required.

In developing this plan, ten canteens have been established throughout the yard (from the Training School in the west storage yard to the outfitting docks), which are supplied immediately prior to each lunch period by special trucks. From these canteens box lunches, sandwiches, pastry, fruit, hot coffee and hot soup are served to the workers, and they also dispense ice cream and candy, cigars and cigarettes, when available. Over 10,000 employees patronize the canteens daily during the 24-hour

Above: An in-yard content in apprehies, false: The main diving room in the service counter. period out of a total average working force of between 15,000 and 16,000 Canteen operators are expected to dispense their food within 10 min utes after the lunch whistle blows, and this timing element governs the need for additional canteens. As soon as a check shows that they are required in any area, other canteens are located in that vicinity.

All commissary activities are cen tered in the Cafeteria building across the highway from the Administra tion building, at the north end of the vard, or, a site overlooking the plant. In this building is a dining hall seat ing 225, a smaller dining room, known as the Redwood Room, the large kitchens, rooms for packing sandwiches and lunches, storerooms and refrigerators. Owing to the halfhour lunch period required by the master contract, there is not enough time for union craftsmen to leave their work in the yard after the whistle blows and go to the Cafetoria Because of this, the Cafeteria is mainly used by office workers with a one-hour lunch period. However, a number of crafts workmen take a hot meal at the Cafeteria before or after their shift, so that a total of nearly 900 meals is served each 24 hours, including meals to the Cafeteria staff.

About 150 of the department, division and section heads are invited by Marinship Corporation to meet on various days and discuss their problems over the lunch table in the Redwood Room. This lunch is paid for by Marinship Corporation and not by the U. S. Maritime Commission. Approximately 70 employees in this group eat in the Redwood Room daily, except Sunday. The Cafeteria itself is open 24 hours a day, seven days a week.

The box lunches and sandwich offerings always include meat sandwiches, cheese sandwiches and filled sandwiches, fruit and dessert, and pastry. Luncheon meats are the best available, costing from 37c to 45c a pound. Meat sandwiches are sold at



and unitabling their professional after the confedera-

10c, milk at 15c a quart or 10c a pint: soup and coffee at 5c a cup. About 145 gallons of soup are prepared each 24 hours from specially purchased soup bones and stock. All box lunches are dated, and those left over are destroyed so that there can be no possibility of a lunch being sold except at the time it has been prepared.

In the Cafeteria, the daily servings of meat consist of three items-roast, stew, and a fried meat. Tuesday is always meatless day, and the following its a typical offering for such a day: chicken pie, filet of sole, a cheese dish and other items which are an acknowledged substitute for meat by the best dietitians. Salads are served in the Cafeteria, but it has been found impossible to keep them fresh for even a short period in the paper containers used at the canteens, where the dressing is applied an hour or two ahead. All food served in the canteens is prepared by the operators of the canteens immediately before its delivery to the canteen itself from the Cafeteria, there being not over a two-hour lapse be-

tween the preparation and the sale of this food.

The above operations are conduct ed by a Cafeteria contractor under contract with Marinship Corporation and approved by the U.S. Maritime Commission. The Cafeteria contractor operates on a percentage basis with a maximum fee. Prices of food are regulated so that a minimum profit is made, such profit, if any, going to the United States Government and not to either Marinship Corporation or the U.S. Maritime Commission. As it is the desire of the Government not to make a profit from this operation, it becomes the task of the Cafeteria management to keep reducing prices and increasing quality until practically no profit is shown.

The food served both at Marinship's in-yard canteens as well as in the Cafteria has been studied by expert dietitians and pronounced bal-anced and suitable for shipyard employees, both craftsmen and office workers.

(All photos courtesy Marinship)

carry. The hischaes are always of great telescent to you'd elidiers. after it being prepared to this big bettild. elight: Farkey 1939, or long or it is excelled. It gas you of the every excepter of littled many (1999) is conduction.







Hendy Feeds Them

When Charles E. Moore, less than two years ago, began the tremendous task of transforming the Joshua Hendy Iron Works from an obsolete plant to a great producer of marine engines, facilities for feeding employees, either in the plant or in the nearby community, were nil. He realized the practical value of well prepared food, readily available, at a moderate price. He knew the influence it would have toward improving health, bettering morale and lessening absenteeism.

Now a modern cafeteria able to provide hot, well-balanced meals for the entire employee staff, seven days a week, around the clock, is in efficient operation. George Wright, who has been connected with the food business for 18 years, organized and is managing this institution.

But food in the cafeteria and soda fountain alone was not enough. It was evident that the men in the shops, with limited time given them by the company for meals, should be reached. As a result, eight miniature cafeterias have been established, strategically placed through the huge plant. Each has an electric steam table, an ice cream cabinet, and a Thermo-tank for dispensing hot coffee.

At meal times two trucks load up with hot food at the cafeteria kitchen.

Nonstrategic paper trays are used at the sub-cafeterias, and engine castings or machinery become the chairs and tables.

Twenty-eight girls are assigned the task of dispensing food from the food stations. With this efficient system, Hendy can now feed the 6500 employees through all three shifts. Although some continue to bring lunches, an average of 4200 meals are served daily, and this figure continues to rise.

The ration system has presented many difficulties. A defense plant, like a housewife, is limited in getting supplies, and the amounts are based on the number of people who in a given prior period have eaten at the company cafeteria. At Hendy the employee rolls have been swelling constantly, so that a food supply based on a given period proved inadequate for the next month. Yet the new employees had to be fed.

Another complication lies in the necessity of balancing menus between rationed and nonrationed items and still having an appetizing array of well balanced meals. As a result of this, fresh vegetables play an ever-increasing, important role in today's menus.

Most food producers are eager to do all they can for defense plant buyers, but with increased numbers of plants and their constant expansions, it is taxing manufacturers and wholesalers alike to keep up with the supply problem. Consequently, Mr. Wright has found that an understanding of suppliers' problems, how they must operate, and a willingness to play ball with them, is the only way to keep the supplies rolling in.

No small problem was that of employees for the cafeteria. There are 80 working there now, the large majority of whom had to be trained to the job.

With these various difficult problems, the cafeteria has nevertheless continued to operate smoothly and efficiently and the meals have brought favorable reactions from employees and laudatory comment from union

Two lines of traffic are handled by this double-sided food-dispensing unit at the cafeteria.

and Government agencies outside the

It is a definite fact that the high quality of food served and the modcrate prices have been largely possible because the cateteria is operated following Mr. Moore's policy of company ownership rather than being a concession. Because it is company owned, it is a nonprofit institution.

The cafeteria has a seating capacnty of 400, the fountain seats 45, and there are two private dining rooms which accommodate 20 and 12, respectively. These last rooms are used by the executive staff, and provide a place where luncheon conferences can be held among a group of commany officers.



Ready for lunch at the Hendy cafeteria.

Belair Solves The Food Problem

Two new cafeterias, under the management of Jules Leonardini, were officially opened on August 9 at the Barrett and Hilp Belair Shipyard, South San Francisco.

Special guests on opening day were Mrs. Cleo Filsinger, nutritionist and executive secretary of Bay Area Nutrition in Industry, and her assistant, Mrs. Jane Hanson. After their visit Mrs. Filsinger made the following report:

"Satisfying the healthy appetites of industrial workers in these days of food shortages and rationing is a tremendous job. It was indeed gratifying to see these shipbuilders stream into the spacious, well-lighted and comfortable cafeteria, make their food selection, eat their lunch, and be back on the job within the regulation half-hour lunch period.

"The healthful variety of Belairmade sandwiches, piping-hot meat stew with vegetables, pastries or ice cream, and beverages gave the workers an opportunity either to select a complete lunch or supplement their home-packed lunch.

"Particularly noteworthy from a nutrition standpoint was the workers' preference for milk. For the coffee-lovers the choice of a 5-cent cup or a huge cup for 10 cents should

he a welcome change from rationing days and should meet with the hearty approval of all those interested.

"In our opinion, Barrett and Hilp could make no greater contribution to the morale of their workers than this opportunity to obtain good food, both hot and cold, in comfortable surroundings. Such food, properly dispensed, is also an essential factor in the health, welfare and comfort of the employees."

COMING FIGHT FOR SHIPYARD HEALTH

(Continued from page 67)

giving the Ministry of Public Health responsibility and authority for examination and cleansing of homes and homers. The loss of sleep from the irritation of this malady really injured production. The measures taken were part of a campaign for general cleanliness. Workers were induced to take baths before returning home, and to avoid taking dirt back with them. A policy of using compulsion instead of tender persuasion was found to be a good part of winning the war on the home front. Bad habits required compul-

sory change as soon as facilities, mld be provided.

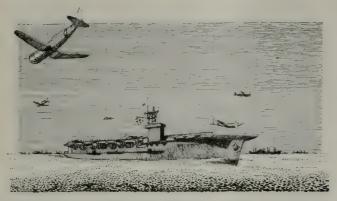
One of the darker spots in Britain was that of venereal disease. In 1940 it nearly doubled. A campaign of not only pitiless but immodest publicity in the frankest terms ever put before the public brought about a great deal of prevention and cure

There was no great increase in neuroses and insanity, even from bombing. It was found that those who were not neurotic before the war could "take it." Suicide diminished.

With regard to colds and influenza, it was found that there was an average loss of about two days per year for each industrial worker. An attack was made against spitting, coughing and droplet infection. One campaign slogan read, "Coughs and sneezes spread diseases - trap the germ by using your handkerchiefhelp keep the nation fighting fit." In one of our local towns a letter to this same effect was written to an editor. Publication was withheld. The cinema advertising may have been regarded as more important than public safety.

Clyde District

In the Clyde basin there has apparently been even greater concentration of efficient effort in such measures as adequate wartime nurseries; a diphtheria immunization schedule; provision of fruit juice, and cod liver oil for infants; supervision of milk distribution; a war for general cleanliness; general medical supervision; early treatment for adolescents; plans for catching disease while it was young; examinations always available; rest homes in the country to relieve congestion in the building areas; insured medical attention for all workers; and particularly careful watch on young people



A BEAUTIFUL BROCHURE

A strikingly beautiful brochure published by Nordberg Mfg. Company, Milwaukee, Wis., is illustrated with four full-page pen and ink sketches by C. R. Slawter depicting types of ships of the Victory fleet, for which Nordberg has built or is building min propulsion diesel engines. All of these are ships building in American shipyards for the U. S. Maritime Commission. The illustration is a reproduction from one of these sketches, showing a type 88-3 aircraft transport motorship.

looking for breakdown and particularly for interference with meals. Where contagion threatened, units were established in all thickly populated and vulnerable areas for decontamination of clothing. British Launderers Association took over the work of collection, treatment and disposal of all civilian clothing. Special training for laundry staffs was provided

Recreation Valuable

Boredom was found to end in real danger to health and to safety rules. Music, radio, sports and wholesome social events were recognized as an indispensable part of the war effort. Our own housing authorities are giving this excellent attention. Even so, queer cases develop from being transplanted While living as a guest in some of these housing units one case was noted-on each day off, this worker went to a certain drug store to study for hours the psychology of the feminine visitors. "I can tell whether they come there to get away from men or to find them." "And what do you do while you sit there?" "I just eat waffles." It reminded me of some of the old-time husky shipbuilders who could live on sandwiches and

Medical Service and Food

All over Britain, two general and vital objectives have been sought—one in medical service and the other in food. In medical care, endless difficulties were encountered in the shortage of doctors. Committees

traveled to balance, redistribute, and arrange for the pooling of services. More women were trained to help. A present plan proposes to extend the existing systems of compulsory health insurance to all citizens without upper income limit, whether gainfully employed or not.

Emergency public health laboratories have been established all over the island within a maximum radius of thirty miles of any doctor. The staffs do not stay at home waiting, but go out for field work to exterminate the small invaders.

In the fight for food there has been a tremendous expansion of communal feeding. There had been too much profit motive in it, and far too many methods of poor cooking and feeding, so a law was passed compelling all industrial plants of over 250 workers to provide hot, nutritious meals for all shifts at reasonable prices under Government subsidy and inspection. It was reported that Britain might not have gotten through this war without these canteens, and that it would have been disastrous without them. Nutrition plans were actually greatly expanded when the military needs were most desperate.

Nutritious drinks were arranged some flavored, some with vegetable ingredients, and some with hot minced meat. As a result, the accident rate went down and better effort and better output were unconsciously produced. Even sharp reduction of toxic jaundice from the manufacture of T.N.T. was traced to better feeding.

A Lesson for America

In all this, where our workers are not adequately fed, and where war plants with sufficient cafeterias are almost unknown, we find our greatest lesson. We have not yet begun to see the dangers involved. We do not know yet the meaning of total war. A large number of our workers suffer from mild or even serious nutrition deficiency. Too many of them without home facilities grab a doughnut and a cup of coffee for breakfast and stand in line at lunch time for twenty minutes to cram down some sandwiches in five minutes. It is slow digestive suicide.

Conferences and advisory committees will not meet this problem. What is needed is fixed responsibility and the authority and power for real action. Production of ships, health, food, housing and transportation, absentees and morale are all inseparable. "The convoy cannot steam faster than the slowest ship."

We have also our rat problems and our malaria problems and our insanities against vaccination. All Pacific rats and some mice are potential plague carriers. There was an outbreak of plague in New Caledonia in 1941 from an unidentified species of rat. The plague flea was taken in the Marquesas Islands some time ago. Rat-proofing along our docks and on our ships is not yet adequate.

We have the malaria mosquito in the interior of the state. The potential danger has spread in the Pacific islands. It is stated that Hawaii may lose its immunity before the war is over. This is no place to recount the splendid work being done by our services in checking all this.

For our health protection in this area, we shall need a bold and blunt public education with help from every plant and every individual. A loyal American does what he can to help equalize the sacrifices in this war. It is going to be a long and bloody affair for our fighting men to put down a nation of 80,000,000 Japanese. Are we going to get action in time or only after a loss of life has to spur that action? Our surgeon-general has well said that we must make our men as good as our machines.

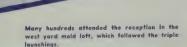
What will greatly help is for every citizen to appreciate the importance and the dangers of our coming health problems and to give his individual cooperation and support.

Left to right are shown Joseph A. Moore, Mrs. Joseph A. Moore, Jr., Mrs. John E. Mock, Mrs. James R. Moore, and Mrs. Joseph A. Moore. Mrs. Mock is the daughter of the shipbuilder: the other through the shipbuilder: the other daughters.in-law.



M DAY AT MOORE'S







TRIPLE LAUNCHING

The three ships and their charming sponsors. At the left is the Monarch of the Seas; and at the right, Mrs. Joseph A. Moore, Jr.





Mrs. John E. Mock and the Spitfire.





The Herald of the Morning and Mrs. James R. Moore.



The Dean of West Coast Shipbuilding and His Aides



Joseph A. Moore
Accepts Award
of the
Maritime "M" pennant.

Joseph A. Moore







Joseph A. Moore, Jr., President

James R. Moore, Executive Vice President





In the upper picture are shown, left, the launching platform of the Herald of the Morning, and right, the platform of the Spitfire.

At the left are Admiral John W. Greenslade; Mrs. Joseph A. Moore, Jr.; Mrs. John E. Mock; Mrs. James R. Moore; and Capt. B. C. Allen, Chief of Staff of the Western Sea Frontier.

In the lower picture, Admiral Greenslade makes his presentation speech at awarding of the Maritime "M" pennant.



Objective Selection of Supervisors

by C. P. Fonda

Reports from various Bay area shippards indicate that disorganization of production is one of our most perplexing bottle-necks. To a certain degree this is the inevitable result of a combination of inexperienced help ind untrained supervisors. Increasing man power difficulties will aggravate this condition, but more attention paid to selection and training of supervisors now will contribute to better handling of this problem.

Indeed, it might well be said that the most critical problem in many shipyards today is the selection of good supervisors in the production departments. At least, this is the case with the Marinship Corporation, where the writer of this paper is employed.

Morale

Good morale (and with it, of course, maximum production) requires supervisors who command the confidence, respect and cooperation of employees under their supervision. It requires men with adequate organizing ability, whose technical knowledge and craft skills are recognized as superior. Good morale reguires also the spirit of loyal teamwork which results from a knowledge that every individual has an equal chance to advance himself. This means that supervisory employees should never be "imported" until every means of developing present personnel is exhausted. All employees, whether new recruits or veterans, should be made to understand that management regards each of them as a potential supervisor.

It is imperative to find an objective system for placing men in supervisory positions, a system which will at least tend to reduce the influence of nepotism, favoritism and "politics."

Objective Selection

Towards that end, this paper urges the development of a comprehensive program to make selection of employees for advancement and promotion on as objective a basis as possible. Such a program should be one which the workers themselves can readily comprehend and approve. It should apply scientific technique to the prediction of individual performance, make possible the maximum utilization of each man's highest skill, and

thus tend to channate costly trial and error experiments. Above all, it should meet from management sufficient funds and power to endow a Personnel Department with the ability to execute the program effectively.

The Personnel Department's activities in connection with such a program would embrace two general types:

- (1) A Training Division, competently staffed and equipped to give instruction and guidance in problems of supervision; and
- (2) A Personnel Board, whose power to determine appointments to supervisory positions should be clearly defined and relatively great.

Training Division

The Training Division should offer supervisory training to any employee, new or old, who can be induced to enroll for classes held during his leisure hours. This training should be distinguished from the introductory, compulsory craft training provided each new employee on company time.

Every employee should understand that supervisors will be selected only from enrollees in the supervisory training courses, and should be urged to enroll at such time as either (a) the employee feels himself qualified, or (b) the Personnel Department's records indicate his readiness to undertake such training.

Supervisory courses should consist of classes of graded development, with strict prerequisites for admission, and regular "sampling" for individual progress. For example, only foremen should be eligible to enroll in classes geared specifically to foremen's requirements. On the other hand, elementary courses should be offered even to new employees. The term "supervisor" as employee in this paper includes all employee-ratings from leadermen to general manager.

The curriculum of supervisory training courses should include both advanced technical instruction in methods of production and, at least equally important, guidance in what might be called "human engineering," i. e., leadership, organization, management, industrial relations and related problems.

Personnel Board

The Personnel Board should be charged with the responsibility of selecting the best qualified candidate for supervisory positions as each opening occurs. It should be provided with an efficient objective sys-

tem for evaluating the merits of can diddres for supervisory positions. It should be enupped with as much information regarding each individual as is available, and be capable of making reasonably accurate predictions of performance in each case. Its decisions should be based upon (a) information provided by the Personnel Department, and (b) reastions to the candidate, who must appear before the board for a personal interview before his appointment is confirmed.

Data used as a basis for evaluating an employee's merits would include (a) a record of his previous experi ence and education, (b) his perform ance in aptitude and intelligence tests, (c) his standing and accomplishment in the training courses, and (d) the quality of work on his present job. Information regarding work on his present job should be a dominating factor in his advancement. It would be derived from regular reports submitted by his immediate superior and should include an estimate of his attitude, growth in ability, development of skill, his relations with fellow employees, and some indication as to how his work compares with theirs

Union Cooperation

A program such as is suggested here, necessarily in the briefest form, would receive the cooperation of the various unions whose members in the yard would be affected. Most union leaders have long recognized the need for such a program, and would be glad to participate in it if approached properly. Their suggestions should be given sincere attention, for they will appreciate that adoption of a plan for better supervisor selection will eliminate many trouble some causes of friction and unrest.

Conclusion

The advantages of a plan such as proposed here are many. Among them are:

- (1) It offers a means of encouraging development of employees whose executive ability may not as yet have been revealed.
- (2) It provides a method for allowing individuals who lack initiative and enterprise to eliminate themselves from consideration without rancor.
- (3) It would speed up the procurement of the most competent available supervision.
- (4) It is vitally important to the building and maintenance of good morale.

The American

Merchant Marine

Production of merchant types of seagoing vessels over 2000 gross tons in the United States during the first six months of 1943 has more than equaled the output for the entire year of 1942. As a matter of fact, if the present rate of production is maintained, in 1943 the industry will considerably more than double the entire output for the year 1942.

Between January 1 and June 30 there were delivered by American shipyards 766 merchant ships with a gross tonnage of 5,706,175 tons and a deadweight carrying capacity of 8,-458,935 tons. Since Pearl Harbor, the shipbuilding industry has produced more than the entire American flag fleet that existed in September, 1939, at the outbreak of war in Europe. At that time the United States had some 1300 merchant vessels of 11,600,000 deadweight tons. Since the United States was drawn into the war in December, 1941, there have been delivered into service during this nineteen months' period a total of 1496 new merchant vessels with a carrying capacity of about 16,575,000 tons. In addition, many smaller vessels, together with auxiliaries and combatant types for the Navy, have also been turned out by American shipyards.

This new production, combined with the American fleet of September, 1939, totals more than that accredited to the first-ranking maritime nation in the world in pre-war days. However, sinkings have occurred in the fleets of all nations, and the exact totals are not available for publication, due to censorship restrictions. It can be safely claimed that, regardless of the depredations of war, the American Merchant Marine is greater in number and tonnage than the combined pre-war fleets of the Axis powers, when Japan ranked as the third

(The author is president of the American Bureau of Shapping. The text is an abstract of remarks at the seminal and meeting of the Board of Managers, American Bureau of Shapping, New York City, Joly 27, 1943.)

by J. Lewis Luckenbach

largest maritime power, with Germany and Italy in fifth and sixth places.

The unprecedented volume of merchant vessel completions in the first six months of 1943 includes 65 tankers of over 1,000,000 deadweight tons and 696 cargo vessels of almost 7,-350,000 deadweight tons, plus 5 large vessels of the combined passenger and cargo type. Of the cargo ships, 608 were of the emergency Liberty ship type and the balance were of the higher speed C-1, C-2 and C-3 basic design cargo ships. Thus cargo ships and tankers are now being produced at twice the rate averaged in 1942, when 652 freighters were finished, of which 542 were Liberty ships and 61 tank ships.

The addition of the new vessels to the United States tanker fleet no doubt ranks us as the largest oil tanker operators in the world. The consummation of the huge tankerbuilding program for the Maritime Commission now under contract will further enhance our position. The pre-war tanker fleet of Norway was sometimes rated as the most modern and probably highest speed large group of tank ships in the world. Some 80 per cent of our pre-war tanker fleet was limited to speeds of 12 knots and under, and two-thirds of the vessels were over 20 years of age. The tankers being constructed today are capable of 25 per cent more speed on the average than the prewar fleet, and have greater carrying capacity.

Of the total merchant vessels delivered in the first six months of this year, Pacific Coast shipyards completed 393 of approximately 4,200, 000 deadweight tons, or 51 per cent of the grand total. The Atlantic Coast shipyards constructed 34 per cent, or 259 vessels of over 3,000,000 deadweight tons, and the Gulf Coast completed 108 ships of 1,150,000 deadweight tons, representing 14 per cent of the total. In addition, a number of large ore carriers have been completed on the Great Lakes.

To the world, probably the most amazing feature of the production of war materials in the United States has been the speed with which the 10,500-deadweight-ton Liberty ships have been constructed. Really any comparison with previous efforts can not be analogous, due to the different technique employed, the basic difference being the extensive use of welding in place of riveting. While some difficulties have been encountered, it must be realized that 1037 vessels were completed and put into service during a period of 18 months, and by the time this report is issued there will probably be 1262 vessels of the Liberty type ready for service or on the high seas. This mammoth achievement of the Maritime Commission, our shipbuilding industry and our labor, is history-making, particularly in view of the large number of combat ships and others built for the Navy, Army and the Maritime Commission general program. It has been estimated that at least an equal amount of tonnage has been turned out for our Navy, and that about the same total of personnel is employed in new naval shipbuilding as in merchant ship construction in United States shipyards.

The average time to construct these Liberty ships was about 79 days. In initiating a program in a shipyard, the first ship generally takes about 200 to 300 days to build, and the time is reduced for subsequent ships of similar type. The first new yards to be established are now constructing vessels in as little as 28 to 32 days from the laying of the keel to the delivery of the vessel, and the

(Page 96, please)



Richard C. Kirstein, formerly of Chicago, who specializes in this form of industrial art at Webster-Brinkley Co.

The isometric drawing—reproduction of objects on a single plane—is used widely in the assembly shops of the Webster-Brinkley Co., Seattle, Washington, to step up production of marine machinery for wartime U. S. Navy and Maritime Commission craft—corvettes, C2 ships, Liberty ships, tank landing craft, task landing craft, Navy net tenders and mine sweepers.

Blue print reading requires particular training and skill, but an isometric drawing does not demand technical knowledge for interpretation and thus is especially valuable during the current period of critical labor shortage.

Isometric drawings of parts, assemblies and major subassemblies are not only used in the W-B assembly shops, but in the instruction books which accompany this machinery to the points of installation and use. Drawings can be reproduced photographically to any size requirements.

Also, isometric projections made before the machinery is manufactured provide a clearly factual picture of all of its intricacies and enable the engineers to make many necessary design changes before poduction is started.

The isometric drawing of a cross-section of the W-B design 24" planetary capstan-windlass, shown here, is a particularly interesting instance,

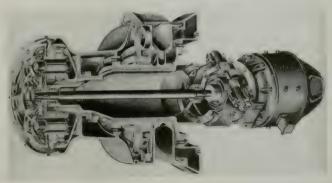
Isometric Art

as it is a composite work, indicative of the meticulously-prepared back-ground existing with such a drawing. Details of the housing were so intricate that separate isometries were made of each detail; then these were photographed, attached to the original drawing, and the entire piece photographed. The result was a

drawing which reduced this intricate assembly to readily discernible, readily understandable visual proportions, even to the new men working in the capstan-windlass assembly area.

Richard C. Kirstein has come from Chicago to specialize in this form of wartime art at Webster Brinkley.

Isometric drawing of a cross-section of the company's design of planetary capstan-windlass.



Diesel Maintenance

Pays Good Dividends

Never before in the history of machinery and its operation has the maintenance factor been so vitally important. Even prior to the present emergency, extensive and complete maintenance programs were too frequently neglected, at the expense of high replacement costs. Formerly parts were readily available from the factory or service depot. Now there is the possibility of not being able to obtain parts because of inability to obtain priority or allotment, but in many instances, if the part is manufactured from critical materials, such as aluminum, copper or alloy steels, the procurement of the part may be delayed because of allocations and allotments.

Today the operators of all machinery are facing this severe problem. It can best be minimized, and in many cases solved, by setting up a good, complete and comprehensive maintenance schedule. In addition, a proper educational program should be instituted on the subject of maintenance and operation for the benefit of those directly connected with the

To assist the operator of diesel engines, a few important points are brought out as suggestions in the following:

First, cleanliness cannot be overemphasized. To a large degree, the appearance of the engine and the engine room indicates the appreciation and care that the machinery has received. Have a place for all tools and equipment, see that they are clean, maintained, and in good working order for instant and ready use. All service lines should be kept tight and free of leaks, and all exposed metal surfaces should be painted or kept bright and not allowed to become rusty and dirty.

Second, all gages and thermometers should be kept in good working order. Replace them when broken

(The author is chief engineer, Enterprise Engine & Foundry Company)

by Roy A. Hundley

or worn out. It is from these instruments only that accurate indications of operating conditions can be obtained. It is advisable occasionally to have these instruments calibrated. If the engine is equipped with thermocouples and pyrometer, clean the thermocouple tips of carbon at regular intervals.

Third, a tabulated routine, recording all maintenance functions, should be set up. This required "paper work"; however, by use of proper discretion and intelligent organization, a suitable record-keeping system can be set up, which will pay hand-some dividends, for only by such records can maintenance be properly

In all cases, the manufacturer's instruction book and maintenance schedules should be followed by operators without deviation. The following is presented as a guide for routine maintenance:

Hourly: All parts of the engine should be felt frequently to detect any excessive temperatures, particularly on the cylinder head and cylinder side covers. Level of the lubricating oil in the service tank should be observed and recorded. Watch for sudden gain or loss of level. Headings on all instruments should be noted and recorded. Turn the handles of cleanable type lubricating and fuel oil filters if such are installed in their respective systems.

Daily (every 24 hours): Open drain plugs of fuel and lube oil filters and tanks to drain out any water or sludge which may have accumulated. Bleed fuel, lube oil and water systems

Weekly (every 60 hours): Check all external linkages, particularly governor and fuel linkages, for freeness of operation. Lubricate all of these moving parts.

Monthly (every 250 hours): Remove inspection covers and check crankcase sump. Remove oil from sump and observe for condition and presence of water or sludge. If any present, determine the cause. Check camshaft and valve gear. Observe freeness of operation and wear.

Every Six Months (every 1500 hours): Flush cooling system to remove any scale that may have accumulated. Observe condition, and if found bad increase the frequency of the period of flushing. Clean heat exchangers and lubricating oil coolers. Inspect gear case and observe back lash of gears and radial and thrust clearance of timing gears.

Annually (every 3000 hours): A general and thorough inspection of the entire engine, pulling at least one piston and cylinder head, should be made. Replace all worn parts, clean all parts thoroughly, and reassemble in accordance with the manufacturer's recommendations. Check packing glands of all pumps. Repack if necessary.

Every time that the engine is open for inspection or being worked on, the importance of cleanliness again cannot be overstressed. If service piping is removed, see that it is thoroughly flushed before it is used to conduct fuel, lube oil, starting air or water, to the engines.

By maintaining a schedule and following rules of care and operation religiously and specifically, even the most inexperienced operator can gain long trouble-free service from his equipment. However, the basis of proper maintenance is "to keep records." Recorded information enables your maintenance program to function successfully. It means longer nonstop performance of equipment, so vital now to bring this world war to its earliest possible conclusion.



Victory Steamer Design Emerges

Much speculative discussion has risen about the so-called Victory hip design, which was tentatively nnounced some months back as the Maritime Commission's substitute for he Liberty ship design in order to tet a faster cargo vessel that would till lend itself to rapid, multiple contruction. The U. S. Maritime Commission has recently released the genral characteristics of this vessel and viven some of the Liberty shipyards he go-ahead sign for their construction.

According to the Commission's aniouncement, contracts for 411 of hese vessels have been let and profuction is expected to be under way in the fall of 1943, with first deliveres early in 1944.

Our illustration shows the general ppearance of the Victory design. The general characteristics of the biberty and of the Victory are compared in the table herewith: To any reader who is intelligently curious, a study of these figures reveals some very interesting facts.

The Victory, with 5 ft. more beam and 13 ft. 6 in. more length than the Liberty, has the same total deadweight, but must have a considerably greater displacement loaded, even though her lines are finer fore and aft.

The Victory will have 15 knots speed, in comparison with 11 for the Liberty, but to get that speed raise of approximately 37 per cent, the horsepower is raised more than 140 per cent.

No figures on steam conditions have been released, but let's assume 450 psi and 750° F. for the Victory as against 220 psi for the Liberty. The turbine job on the Victory would give a fuel consumption rate of about 0.65 pounds per shp hour, and the reciprocating job on the Liberty would give 1.2 pounds shp hour. The Liberty would burn 3000 pounds and

the Victory 3900 pounds of oil an hour. Assuming a 6000-nautical-mile round voyage, the Victory would make it in 400 hours' steaming time and would burn 780 tons of oil; the Liberty would make it in 545 hours steaming time, and would burn 817 tons of oil. Assuming a week's turn around at each end of the voyage, the Victory would make 11 round trips a year, and leave days enough for annual docking and overhaul. On the same basis, the Liberty would make nine round trips a year.

Assuming both ships loaded to deadweight cargo limit: the Victory would carry in round numbers 100, 000 tons of cargo each way per year on a fuel consumption for steaming at sea of 8580 tons; and the Liberty would carry 81,300 tons of cargo each way and burn 7353 tons of oil for propulsion.

It would seem, then, that considered singly a Victory ship equals a little more than 114 Liberty ships in cargo carrying capacity. Traveling in convoy, in order to achieve this measure of superiority, the comparison would have to be made between a convoy composed wholly of Victory ships and one composed entirely of Liberty ships.

The Victory ship has the additional advantage that it is much more in line with the modern American idea of proper design for cargo liner service.

red in the table herewith		Zicore, we are a series a	
	Victory	Liberty	
Length	455 feet	441 ft. 6 ins.	
Beam	62 feet	57 feet	
Deadweight tonnage	10,800	10,800	
Cargo tonnage	9146	9146	
Engine horsepower	6000 or more	2500	
Propulsion power	Steam turbine-gear	Steam reciprocating	
Decks	3	2	
Speed	15 knots	11 knots	

Iron Fireman

Builds Liberty Engines



Portland Firm Makes Record Production on Big Triple-Expansion Engines

On August 20 the Iron Fireman Industrial Division in Portland, Oregon, completed its 200th marine engine, and delivered it to the Oregon Shipbuilding Corporation. The Iron Fireman Manufacturing Company supplies all the engines for the famous Portland Kaiser Liberty shipyard.

It was on April 12 that Iron Fireman celebrated the delivery of the 100th engine. That was a memorable occasion, because it was just 10 months after the first engine had been delivered.

Each month the company sets new production marks. The second hundred engines were built in four months and eight days.

Now the production schedule calls for 30 engines a month, and at present the company has contracts enough to keep at that schedule until early next summer.

These marine engines for Liberty ships weigh 270,000 pounds, and have a stroke of 48 inches and cylinders which range from 24½ inches in diameter in the high-pressure-cylinder and 37 inches in diameter in the medium pressure cylinder to 70 inches in diameter in the low-pressure-cylinder.

The 200th engine built by Iron Fireman Industrial Division.



U. S. Pipe Expands Again

For the fifth time in four years the former U. S. Pipe Bending Company, now the U. S. Pipe and Manufacturing Company of San Francisco, has expanded to meet the demands for its services and products. This progressive firm has now acquired the American Marble Works of South San Francisco, and has revamped that concern into a modern pipe fabricating and manufacturing plant.

The site comprises seven acres of level ground on which stood a heavy frame building 100 feet wide and 250 feet long, having two 50-foot bays. This building was surrounded on three sides by a heavy concrete shipping and receiving floor, served at the side and both ends by spur tracks.

Here U. S. Pipe has put in a good rock-fill base, surmounted by a heavy concrete floor, and installed nine of its pipe bending machines with capacities from ½-inch to 8-inch, and twenty 300-ampere welding machines.

Over one of the bays of the shop is a 30-ton-capacity electric traveling bridge crane, and there are three traveling gantry type cranes. This South San Francisco shop is being operated in addition to the two San Francisco plants, and will specalize on pipe bending and welded pipe fabrication. This work is today being done largely for shipsurds. Among those served are Mariniship Corporation, California Shipbuilding Corporation, Kaiser Cargo, Inc., Richmond Yard No. 4 of the Kaiser Company, and the Moore Dry Dock Co.

Interior of the shop

The Fremont Street plant of U. S. Pipe is now specializing on the production of steel valves, and the First Street plant on cast steel pipe fittings, forged steel fittings and forged steel flanges.

U. S. Pipe claims to have a crew of the most expert pipe welders on the Pacific Coast and is very proud of the fact that the move to South San Francisco was made without appreciable loss in this welding crew.

As would naturally be expected, the specialization in the three shops has led to a marked increase in the speed of production. That this has been achieved with no loss of quality is attested by the illustrations, showing examples of the pipe fabrication in the new plant.

Sample of welding fabrication in steel pipe.









Steady as you go! HOUNGE IS THE STRRIGHT COURSE TO ROUNDEEDET



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome St., San Francisco, California

THE LIBERTY SHIP

Dear Skipper:

Would you kindly discuss the Liberty ship in your next issue? Tell us just what is wrong with them. I have heard several shipmasters say that they would never again go to sea in one. I have heard others say that they would rather sail as chief mate of a "C" type ship than go out as master of a Liberty. Is this feeling justified, and are they enough inferior to the "C" type to be that marked? What are their weaknesses? Why do their compasses give so much trouble? If you will answer these questions and give us any other useful information about the Liberty ship, it will be greatly appreciated.

Yours truly,

A. L. J.

ANSWER

Your letter is a most welcome one, for "The Skipper" has been waiting for months now to discuss this very important part of our "bridge of ships," for he too has heard these disparaging remarks about the EC-2 Liberty ships. For the past several months "The Skipper" has investigated this subject pretty thoroughly, having discussed at great length these ships with masters, officers and the crews that sail them, and has found much that was good about these fine vessels.

There is one thing that as sailors we must all remember, and that is that the perfect ship has never been built, and when the day comes that a ship is finally built, entirely free of faults, she will probably sink at her launching from the weight of her own perfection.

We are firmly convinced that there is nothing wrong with the Liberty ship that a sailor cannot remedy, and that as a ship she is able to go to sea, safely reach her destination and deliver the goods, turn about and return to do the job right over again.

Because you have requested a discussion of her faults rather than her virtues, we shall start with the faults most commonly expressed and shall discuss them one at a time. Perhaps by bringing them out into the cold light of day, they will probably shrink to their proper unimportant place in the scheme of things.

The Bridge

Complaint No. 1. "They are an open bridge job, and as such uncomfortable." Another version of this is that "they have a fine wheelhouse that you cannot see out of!" and so on about the bridge——.

The best answer to that is the fact that, in this world at war, any officer that stands a bridge watch in any spot in the ship where he does not have a clear and unobstructed view of the horizon at all times, and of the sky above it, is derelict in his duty, and is not taking with the proper amount of seriousness his responsibility to his ship, her cargo, and the hundred or more lives entrusted to his care. Just as blind spots in a plane are death to an aviator, so also are they apt to cover the angle of approach of the fatal torpedo; therefore no matter how high the wheelhouse is built, on any safely run ship the watches are stood one deck higher. This is a condition brought about by the war and cannot be blamed on the Liberty ship alone.

Ventilation

Complaint No. 2. They are hot ships. The quarters are hot and uncomfortable. This is unfortunately true, due to some extent to their construction, but this warm construction, though uncomfortable in the tropics. is very welcome in the North Atlantic and on the Murmansk run, so this complaint is not uniformly true. Again much of the discomfort is due to the blackout condition under which ships must operate. Once these ships are able to run free and open they will not be especially hot, and remember that under blackout conditions or in the tropics all ships are equally hot.

Originally, the galley, being inside, was designed pretty well shut off from ventilation, but all of the latter Libertys launched have a blower in the galley that helps out the working conditions in this important department.

Speed

Complaint No. 3. They are slow.

This is only too true; however most of them are doing well over their designed speed. Some of them are doing much better than what we were in the habit of classing as fast freighters a few years ago. The change-over to a higher powered plant will eventually take care of the speed problems. Always, these days, the fast ships are slowed down by the slowest vessel in the convoy, so that even the fastest of them cannot always use their speed to advantage.

Because of their slowness they are often routed differently from the faster vessels, and the safety factor to ship and cargo just about balances out in the long run.

Compasses

Complaint No. 4. Their compasses. The magnetic compasses on a Liberty ship are perfectly all right, but under war conditions they are called upon to do the impossible. These compasses are controlled by natural laws, and these we cannot change no matter how skillful or rapid we become in shipbuilding or shipfitting.

When ships were built from the keel up, plate by plate on one ways and on one heading, a definite magnetism was built into her, which we knew as subpermanent magnetism had its positive and negative poles, dependent upon the heading of the ship while she was being built. This was called subpermanent because it was

hearly permanent, and remained constant until the ship had major altera-

tions performed

This subpermanent magnetism gave each vessel a known polarity that could be easily compensated for, and once the compasses had settled down after adjustment, they functioned in accordance with these established natural laws of magnetic attraction, hence gave very little trouble. On many ships the frequent azimuths be came repetitious, and any change in deviation was, more often than not, due to a faulty bearing.

Conditions are vastly different in the construction of the Liberty ships of today. These vessels are largely prefabricated, in sizable sections in varying parts of the builders' yard, and frequently in inland areas. Each of these prefabricated sections sets up its own magnetic poles as it is built, and transported.

If you would try to figure out the polarity of a heap of six-inch magnets, rough piled and crisscrossed on a table, you would be in the same position as the man trying to adjust your compass on a prefabricated ship. These many sections of the ship, each with their own polarity, are welded together and the magnetic influence of each part is pulling and working on the one adjacent. It cannot result in anything but a magnetic upheaval within the hull of the ship, until time alone lets the ship settle down and adopt her own polarity, according to magnetic laws of force.

To add to the confusion, a ship that is delivered to her operators on Monday is probably scheduled for deperming on Wednesday. This deperming, as its name implies, is an attempt to remove some of the components of subpermanent magnetism. It also adds to the magnetic struggle within the structure of the ship itself.

The electric cables of the deperming process are hardly removed from around the vessel when the modern miracle man, the compass adjuster, comes aboard. He carefully adjusts the compasses for the magnetism he finds in the ship at the moment, and gives you a fine deviation card, that is usually in error before the ink is dry upon it. With this card you go to sea, and you are shocked with your first azimuth.

This is not the fault of the compass adjuster, nor of the compass, but is due entirely to the changing conditions of the magnetism within the ship itself. There are only two possible errors in the adjustment, undercorrection or overcorrection, and seemingly to date, the majority of cases we have met have been over corrected at the start. Either condition is easily remedied by the ship master in a few brief minutes, if he will but take the time

In the trays or racks under the compass there are installed magnets athwartships and fore and aft. On magnetic headings north or south. the athwartships magnets are used to compensate for the athwartships component of subpermanent mag netism, while on magnetic headings east or west, the fore and aft magnets are used to correct the fore and aft component of subpermanent magnetism. This is all there is to it, with no involved computations necessary.

If your compasses have been overcorrected, as so often seems to be the case, first put her head on magnetic north, steady her up and get your bearing. Now take the bottom magnets in the tray and move them down one space, then check to see if this compass is more nearly correct. It is best to leave a bit of deviation there to be further decreased on heading south.

Repeat this operation on east and west headings, and if your compass was originally overcorrected, this will improve the first adjustment and reduce your deviation. If it hasn't helped or increased the deviation, that should have been apparent when you moved the first magnet, and if it has not, and these magnets do not overcome your trouble, then look to your flinders bar.

On some ships 12 inches of flinders bar seem to be required to overcome the vertical component, and on others 9 inches does the trick. The deperming is supposed to remove the vertical component, or at least reduce it to a safe margin for war needs.

One other important influence on the compass, of course, is the magnetic influence of the war materials that our ships are carrying these days. Much of the cargo is of high grade steel, and has its own effect upon your compasses. It is well when you go on the loading berth to note the ship's head, record it twice a day, taking azimuths at the same time and also check with distant ranges or objects while at the dock. You cannot have too much information about your compass and its actions before you put out to sea. We were aboard a vessel the other day where the captain kept a watch set on apparent time in the chartreem for the Jura tion of his stay in port. This was, of course, set each morning when the chronometers were wound, and trequent azimuths were taken Juring the day by the junior officers. There was one master that was well intermed about his compass, and had little trouble with it

Another important item is to have a deviation table for your ship with the degaussing turned on and grop orly set for the locality. This will be invaluable when making a landfall, where you will have to have your coils energized for safety. Several masters we have talked with energize their coils several days before they are required to, in order to have a thorough check on their compasses This idea is one that we endorse fully, for the slight additional cost of the energizing more than offsets the time saved and additional safety to the vessel by knowing fully what the compasses will do before making the coast.

The Liberty ship was built, of course, as a war measure, capable of rapid production and good carrying ability. To this end, the designers and builders have done a remarkable iob. These vessels are especially stable ships, capable of carrying a good deckload, with excellent facilities for ballasting as the need arises. All double-bottom tanks should be kept pressed up at all times, especially with a deckload. This is easily accomplished with her oil-carrying capacity and the distribution of her

The information provided to the master in the Operation Instructions and Stability book is clear, concise and easily understood. By following the simple formulas provided, the master has an understanding and control of his ship that has never been available in any other type ship, except by involved and tedious formulas that drove men to rule-of-thumb methods.

These ships handle well and steer fine, have good auxiliaries and equipment, and usually make better than their designed speed. Their power plant is simple and easily handled, their fresh water capacity is ample and well arranged.

In view of the foregoing, we are sure that, given another year of operation, the Liberty ship will have just as many loyal boosters as she has fault-finders, if that condition does not exist already.



by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief,"
Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

X-GOVERNOR AND CONTROL MECHANISM

The governing system is designed to maintain constant speed of the turbine under varying load and steam conditions, and includes an emergency device that closes the throttle valve when the turbine overspeeds.

An assembly of the valves and governing parts, showing how they are mechanically and hydraulically connected, is given in Fig. 1. The design of the several parts permits that the speed of the turbine shall determine and control the amount of steam passing through the turbine nozzles.

As indicated in Fig. 1, the oil pump and the main governor are driven through a worm and gear, the worm being directly connected to the shaft of the low-speed member of the reduction gear and thereby driving the governor at a speed that is directly proportional to the speed of the turbine. With an increase in turbine speed the governor weights move outward and draw the pilot valve downward; with a reduction in turbine speed the weights move in and push the pilot valve upward. It is the position of the pilot valve with respect to the pilot-valve bushing that determines the flow of oil to the operating cylinder, and therefore the position of the operating valves that admit steam to the turbine

The flow of oil from the oil pump to the hydraulic cylinder can be traced in Fig. 1. When the pilot valve is raised to a position that covers the port in the pilot-valve bushing (as the result of a reduction in turbune speed), full oil pressure is exerted on the piston of the operating cylinder, causing it to lift and thereby open the controlling valves. When the pilot valve is lowered below the top of the port in the pilot-valve bushing (as the result of an increase in turbine speed), some of the oil passes down through the pilot valve bushing, causing the pressure in the hydraulic cylinder to be reduced: this allows the piston to drop and move the operating valves towards the closed position.

It will be noticed that the governor lever connected to the top of the pilot-valve bushing is pivoted at one end and connected to the operating valves at the other end. This provides adjustment of the position of the pilot valve bushing for each new operating condition. The reason for this is as follows:

When operating at a constant speed for a given set of conditions, the relative position of the pilot valve and bushing is such that just enough oil is being by-passed down through the pilot-valve bushing to maintain the correct pressure under the piston in the hydraulic cylinder. When, for instance, the load is increased, the consequent drop in speed will let the governor weights move in to raise the pilot valve and reduce or eliminate the amount of oil being bypassed, with the result that oil pressure in the hydraulic cylinder is increased, the piston is raised, the operating valves are lifted, and the addition of steam flow increases the speed of the turbine. However, lifting of the piston causes the end of the governor lever to be lifted, which through its connection to the pilotvalve bushing causes the bushing to be raised to a new position relative to the pilot valve, until a state of balance for the new operating condition is reached. This new position is one that again permits by-passing of just enough oil down through the pilot-valve bushing to maintain the required oil pressure under the piston in the operating cylinder.

When the turbine is at rest, the piston (26), Fig. 2, in the operating cylinder is down to its lowest position, and the operating valves (16) are closed. The governor weights are in, and the pilot valve is at its highest position. In this position the pilot-valve overlaps the port opening in its bushing (15). When starting up the turbine, the operating valves must be lifted off their seats by means of the hand-operated oil pump, located at the side of the reduction gear. Steam is then admitted by partly opening the throttle valve, and the turbine starts turning. As the rotor speed increases, the oil pressure builds up and soon gives sufficient oil pressure to lift piston (26), Fig. 2, and fully open the operating valves After the turbine speed has increased sufficiently the governor weights begin to move outward. When the turbine attains the speed for which the governor has been set, further increase in speed will uncover the port in the pilot-valve bushing and cause the pressure to decrease and the operating piston (26), Fig. 2, to lower until the position of the operating valves is such that the correct amount of steam is being admitted.

BOOK REVIEW

Ship Wiring: A primer of cable and fixture installation by John E. Scull; 240 pages illustrated and indexed; published by Cornell Maritime Press. Price \$2.00.

A most timely handbook covering the current and important subject of the installation of cable, fixture and equipment in shipboard work. As marine electrical work gains in complexity, its call becomes more urgent for both the specialist and highly qualified worker.

Many years of general practice in marine electrical work, plus more recent shipyard experience in training hundreds in this type of work, has enabled Mr. Scull to present his subject completely, concisely and understandingly.

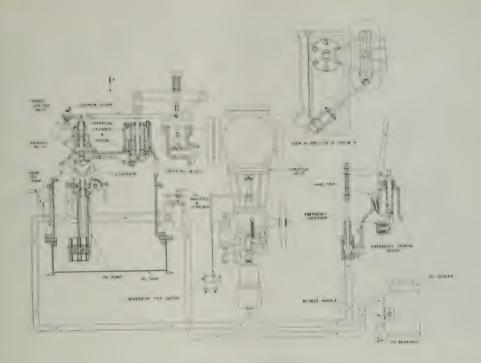
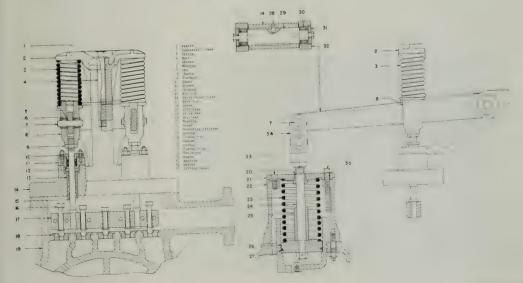


Fig. 1: Governing mechanism (525-kw set).

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Fig. 2: Valve gear and operating cylinder (525-kw set).



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Pacific Shipping News

By Special Correspondents



Jeremiah M. Daily sliding down the ways.

Jerry Daily Honored

Veteran San Francisco shipping memore delighted at the honor paid to their old friend Jeremiah (Jerry) M. Daily by the U. S. Maritime Commission in naming for him the Liberty ship launched August 10 at the Permanente Metals Corporation shipyard No. 2, Richmond, California.

The late Jerry Daily won an international reputation for efficiency and courtesy during his many years' service as manager of San Francisco's Marine Exchange. He kept track of the movement of San Francisco's ships all over the world with almost uncanny accuracy, and was personally known by every deep-sea skipper making the port.

Miss Elizabeth Anne Cremer, daughter of M. A. Cremer, present secretary-manager of the Marine Exchange, sponsored the vessel, assisted by Miss Buena Cutler as Maid of Honor. Reverend John Lally, pastor of the San Francisco Apostleship of the Sea, pronounced the invocation. Peter B. Kyne, the noted author and a lifelong friend of Jerry Daily, gave reminiscences of the old days on the Exchange floor.

Californians in United States Chamber

The United States Chamber of Commerce has appointed leading San Franciscans to its major committees, according to recent announcement by Louis B. Lundborg, general manager,

LAUNCHING PARTY AT JEREMIAH M. DAILY CEREMONIES

Left to right: Rev. John Lally, M. A. Cremer, Miss Buena Cutler, Miss Elizabeth Anne Cremer (sponsor), and Peter B. Kyne. San Francisco Chamber of Commerce.

Frazer A. Bailey, executive vice president of the Matson Navigation Co., is a member of the new U. S. Chamber committee on International Transport.

Philip J. Fay continues as chairman of the committee on National Defense, a chairmanship he has held since 1933.

H. H. Hilp, Barrett & Hilp, is a newly-appointed member of the Construction and Civic Development Department Committee,

Roger D. Lapham, chairman of the board, American-Hawaiian Steamship Company, and former member of National Chamber's board of directors, is a new member of Fay's Committee on National Defense.

Albert C. Mattei, president, Honolulu Oil Corporation, and U. S. Chamber vice president, is a member of Executive Committee and Natural Resources Department Committee.

Almond E. Roth, president, San Francisco Employers' Council, has been reappointed member of the Committee on Social Security.

Dr. Henry F. Grady, president, American President Lines, will serve for another year as member of the Chamber's Canada United States Committee.

First Liberty Tanker

The U. S. Maritime Commission has embarked on a program of producing tankers faster by constructing 102 E-C-2 Liberty steamers as tankers. No details of the structural changes necessary have been released, but the first Liberty tanker to be launched on the Pacific Coast slid down the ways at the Calship Yard, Terminal Island, Los Angeles, on August 10. The official designation of these new type Liberty steamers is ET-1, and the first ET-1 was christened John Goode.

She was sponsored by Mrs. Kenneth Dawson of San Francisco, wife of the vice president of the United States Shipping Lines and president



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of Pacific Tankers, Inc. Miss Virginia Field of Palos Verdes was Maid of Honor.

Honors to Shipyard Workers

San Francisco Bay area shipyards made a clean sweep of national honors for production suggestions an nounced on August 9 by War Production Drive Headquarters, which estimates that the ideas will save approximately 7847 man hours per ship.

Forty-one shipyard workers, in cluding a woman who holds down a regular job as a burner, will receive the national awards, which include: one Citation for Production Ideas, highest honor granted to a civilian war worker—the thirteenth such award to be made since Pearl Harbor; four Certificates for Production Ideas, and 36 Honorable Mentions.

Robert Burton Brown, supervisor of the jig shop at Bethlehem, receives a Citation, the top honor, for developing 20 separate devices to speed production. Fifteen of these he invented and perfected alone, and five he perfected from suggestions passed on to him by other workers, who also were honored by the board.

Labor - Management Committees represented by the California winners are:

Marinship Corp. and Metal Trades Council, AFL, Sausalito—two Certificates, 14 Honorable Mentions.

Permanente Metals Corp, Richmond Shipyard No. 1, and Metal Trades Council, AFL, Richmond—one Certificate, 14 Honorable Mentions.

Bethlehem Steel Corp., Shipbuilding Division, and Metal Trades Council, AFL, San Francisco—one Citation, one Certificate, three Honorable Mentions.

Kaiser Co., Inc., Richmond Shipyard No. 3, and Metal Trades Council, AFL, Richmond—five Honorable Mentions.

Postwar Planning

American and British steamship executives are undertaking studies as to the problems of their seagoing personnel in the postwar era. The American phase of these studies is being carried on by committees of the American Maritime Council.

Two outstanding Pacific Coast steamship executives, Henry F. Grady, president of the American President Lines, and Charles L. Wheeler, vice president of the McCommick Steamship Company, are chairmen respectively of the Commit tee of Foreign Trade and the Committee of Seagoing Personnel

This study is a very necessary and useful effort, because at the close of the present war the economic and political factors affecting foreign trade and sea borne commerce will be vastly different from those with which we have dealt in the past

Concrete Oil Barges

The U. S. Maritime Commission as of August 11 announced a sharp reduction in its program of building concrete oil barges. Originally the plan was to build 65 of these oceangoing towed carriers. This has now been reduced to 33. Significant to California and a matter for pride in local achievement is the fact that Concrete Ship Constructors of National City, California, is not affected by this reduction. The U. S. Maritime Commission release comments thus:

"A third company involved, the Concrete Ship Constructors, of National City, California, was not affected by the revision. The company holds a contract for the construction of 22 barges, seven of which have been delivered and three more launched. Construction costs of barges built in this yard have been far lower than those of the other two builders."

Portland Ship Crews

The Portland agents of the Sailors' Union, Marine Firemen's Union and the Marine Cooks' and Stewards' Union are facing a big problem in supplying crew personnel for the tankers being turned out now at Swan Island and the Liberty steamers being delivered from Oregon Shipbuilding Corporation. The two yards are delivering between them better than four vessels a week. This means that approximately 135 men a week must be provided for new ships.

These men are recruited from various sources, some from other ships, some from training schools. Training is being carried on by the U. S. Maritime Commission and also by the unions involved.

Port Authorities Meet

Port authorities of Pacific Coast ports met in Seattle, Washington, July 27 and discussed postwar problems of public and private terminal operations. They included California



DESTROYER FUNNELS
GET FINISHING TOUCHES

The huge funnels of the destroyers building at the plant of the Seattle-Tacoma Ship-building Corp. in Seattle require much careful work. The photo shows two of the stacks side by side, with workers atop and hard at work. The funnels are hauled to the outfitting wharves by a jitney, and installed.

and Oregon operators, who were en route to Vancouver, B. C., where they attended the annual meeting of the Pacific Coast Association of Port Authorities.

One of the subjects discussed at the Vancouver conference concerned the disposition, after the war, of terminal properties taken over by the Federal Government for war purposes.

Col. W. C. Bickford, general manager and chief engineer of the Port of Seattle, and J. W. Brennan, of the San Diego Harbor Board, were the principal speakers on this topic.

Port authorities from San Francisco, Oakland, Stockton, Alameda, Richmond, Los Angeles, Portland and Seattle, attended the Seattle conference, which was held in the Bell Street Terminal.

Women Welders' Show

Associated Shipbuilders, Seattle, held a style show on August 2. Modeled was the type of clothing the woman welder should wear in order to be comfortable and safe in a shipyard teeming with activity.

Twelve young women, picked by the welding foreman, modeled on a runway in front of the bandstand in the big shipyard. The shipyard purchased complete outfits for the 12 women.

After the women did their strutting, men impersonating their wives and sisters took the runway and displayed what women welders should not wear.

Fiftieth Barge Launched

One hundred per cent completed, the 50th twin-screw diesel-powered barge built by Maritime Shipyards, Inc., Seattle, Washington, for the War Department, was launched on August 12 with elaborate ceremonies.

Five minutes after the vessel completed her journey down the ways, her twin-screws were churning the water and she left for her trial voyage and speed tests.

The 44th Division Artillery Band from Fort Lewis furnished the music at the ceremonies and gave an hour's concert in the yard for the entertainment of the employees and members of their families. Luncheon was served to more than 400 persons in the big plant.

The barge was christened by Mrs. Finn Lepsoe, wife of the owner of Maritime Shipyards. The co-sponsor was Mrs. Leo Barnecut, wife of the plant superintendent.

Mr. Lepsoe said the yard had been launching barges for the War Department every nine days and decided to celebrate when the 50th vessel was sent into the water.

Port Authority Officials

At the closing session of the convention of the Pacific Coast Association of Port Authorities, held the end of July at Los Angeles, Eugene Overton, Los Angeles Harbor Commissioner, was elected president to succeed K. K. Reid of New Westminster, B. C.

Joe Brennan, Port Director for San Diego, was named vice president.

Among the resolutions adopted was one calling on the Government to return harbor facilities taken over for war purposes after the cessation of hostilities.

New Tanker Firm

A new California corporation, known as the Los Angeles Tanker Operators, Inc., was registered in Sacramento on July 12, with headquarters at Los Angeles, California.

Captain H. H. Birkholm of Los Angeles is president of the new firm. He is a vice president of the General Steamship Corporation of San Francisco and the Southern California manager for that firm.

Joseph F. Marias is executive vice president of the Los Angeles Tanker

FIFTIETH BARGE

Maritime Shipyards, Inc., on the Lake Washington Ship Canal, on August 12 sents its 50th twin-stere diesel-powered barge built for the War Department down the ways. She is 86 feet long, 27 feet beam and 12 feet depth, and is equipped with two 130-hp engines. The barge is shown during launchina.



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JOSEPH F. MARIAS

Operators, Inc. "Joe" is that same dynamic character who recently served with credit as president of the State Board of Harbor Commissioners for the Port of San Francisco. He has had long and wide experience with Pacific Ocean shipping.

On the board of directors from Los Angeles are: Emerson Spear, vice president Pacific Wire Rope; Morgan Adams, president Morgan Mortgage Corporation; A. P. Scott, capitalist; and Eugene Overton of Overton, Lyman and Plumb, attorneys. H. S. Scott, San Francisco, president General Steamship Corporation, is a director.

The new firm is building up an organization with the intention of operating tankers that may be allocated to it by the War Shipping Administration. Its directing heads are experienced shipping executives, and it appears to be well backed financially.

Shipowner Honored

John B. Bryan, president since 1938 of the Pacific American Shipowners Association, and widely and favorably known in the American shipping industry, was appointed on August 10 to serve on the War Shipping Panel of the War Labor Board.

New Chilean Line

In San Francisco on August 9 it was announced that Chilean interests with headquarters in Valparaiso have organized a steamship line with six freighters of medium tonnage, and will operate between the West Coast of South America and United States ports.



Elected Vice President

The Board of Directors at its regular monthly meeting on August 4 elected H. H. Pierson, Pacific Coast manager of the De La Rama Steamship Company, Inc., as vice president, succeeding E. H. Harms, now regional director at San Pedro for the War Shipping Administration.

The board announces the formation of a new group of committees, as follows: Floor (in charge of the Exchange Floor); Freight Brokers; Law; Machinery Manufacturers and Agents; Marine Insurance; Marine Safety; Shipbuilding and Repair: Ship Documents; Steamship Affairs and Operation (American); Steamship Affairs and Operation (Foreign); Stevedoring; Tanker Operations; Towboats; and Lighterage and Traffic Advisory.

The board watches marine legislation carefully, and notes the following bills passed and pending:

Deportation of Deserting Seamen: On July 13, 1943, a bill was signed by the President calling for the deportation of seamen who had deserted their ships, to the deserters' homeland, to the country harboring their homeland's provisional government, or to the country most adjacent to their homeland. In the San Francisco Bay area the new legislation was welcomed by the immigration authorities, as well as ship operators using Chinese and Indonesian crews.

Chinese deserters, of whom there are perhaps 300 to 400 in the Bay area, left their ships for higher wages ashore. Many of them, it is be-

lieved, were encouraged to do so by the Chinese Maritime Union, a CIO affiliate. The new bill permits their deportation to India.

Indonesian deserters, it is known, began returning to their ships when they learned they could be deported to Dutch Guiana on the north coast of South America.

Ocean Freight Refund

A bill signed by the President on April 26 gives the War Shipping Administration authority to negotiate a refund of such part of ocean freight charges paid for shipments on vessels operated or controlled by the W. S. A. as the administrator might deem proper, with due consideration to the interests of the United States Government.

In accordance with this authority, the W. S. A. informed the Ocean Freight Refund Committee of San Francisco that it would refund the ocean freight paid on West Coast loadings discharged at West Coast ports short of destination at the time of Pearl Harbor. The vessels concerned are the steamships Presidents Garfield, Johnson, Monroe, Polk and Taylor, and the S. S. Maui. The current settlement covers West Coast loadings only, and is based on a full refund of ocean freight, less \$5 per ton for handling the cargo.

Negotiations covering refunds for other loadings and other vessels are proceeding satisfactorily.

Unemployment Insurance for Seamen: The California Employment Commission declares that, effective on July 1, 1943, scamen are covered by the California Unemployment Insurance Act, based on a ruling (U.S. Supreme Court, May 24, 1943) to the effect that no provision in the Federal constitution or laws of the United States prevents a state from including maritime employment with in a state unemployment insurance, provided the state law so permits.

War Shipping Administration takes the position that the California law does not apply to seamen employed by the United States on vessels owned or bare-boat charters I be the W. S. A.

Requests made of the Commission to amend its order by excluding off shore shipping until it is demonstrated whether and to what extent such shipping is covered, and until appropriate and comprehensive requilations are issued by the Commission, were unavailing.

The term of office of the members of the Commission has expired and a new commission is to be appointed. In the meantime, while deductions are being made from the wages of seamen other than those employed by the United States, great confusion as to the law's application prevails.

Federal Unemployment Insurance for Seamen: Two proposed laws for Federal unemployment insurance were presented at the last session of Congress. They are known respectively as Committee Print No. 1 and Committee Print No. 2.

Both prints are opposed because of two outstanding objections. They propose a revolutionary and dangerous departure, in that they propose to rest in marine labor unions the administration of unemployment insurance for seamen. They also impose on the maritime industry alone the entire financial burden of a single unemployment insurance system instead of spreading the risk, as is the case with all other industries.

There are other objections in Print No. 2 which can be remedied by amendment.

The Walsh Bill: The Walsh Bill, introduced in the previous session of Congress, regarding which hearings will be held when Congress reconvenes, authorizes the Secretary of the Navy to settle claims up to \$50,000 for damages and salvage services, and to certify larger claims to Congress.

The bill was introduced at the re-

(Page 96, please)

On the Ways - SHIPS IN THE MAKING

Big Day at Permanente Metals

A steel plate, the first to be produced by the iron and steel division of the Kaiser Co., Inc., Fontana Plant, was rushed to Richmond Yard No. 1 by fast express to be welded into the deck in time for the launching of the S. S. Richard Moczkowski, named for a World War II hero from Richmond, California. At noon on August 22, Mrs. Ernest K. Lindley, wife of the Washington editor of "News Week," christened the ship, while Mr. Lindley interviewed Henry J. Kaiser as part of the ceremony.

Later in the day Richmond yard No. 1 launched the S. S. Floyd Bennett, named for the World War I air hero. At the impressive ceremony, Mrs. Harry W. Morrison, wife of the chief of Morrison-Knudsen, partner in the Six Companies, christened the Liberty ship.

Moore wins "M"

Moore Dry Dock Company and its employees, in honor of outstanding achievement in vessel construction, conversion and repair, celebrated with a triple launching and the presentation of the U. S. Maritime Commission Merit Awards, the Maritime "M" Pennant, the Victory Fleet Flag, and the Maritime Merit Badges, awarded by Vice Admiral John W. Greenslade, Commandant, Twelfth Naval District, on August 14.

Launched by the yard were the S. S. Spitfire, sponsored by Mrs. John E. Mock; S. S. Herald of the Morning, sponsored by Mrs. James R. Moore, and S. S. Monarch of the Seas, sponsored by Mrs. Joseph A. Moore, Jr.

Besides building Libertys and six other types of vessels, the firm has established a Pacific Coast record for ship repair and conversion.

Calship Yard Employees Pay for Liberty Ship

The first Liberty ship ever to be financed by the men and women who built it was delivered on August 18 at the yards of the California Shipbuilding Corporation in Wilmington, after the last section of a model was put in by Mary Pickford.

Celebration of the event by a big yard show held on the bow of the S. S. Henry M. Robinson, during which Miss Pickford, who sold more war bonds than any other individual during World War I, praised the 42,000 loyal workers of the yard on their tremendous achievement, saying that they had gone over the top in their drive to subscribe for enough bonds to buy a Liberty ship each month, and by an additional drive, launched on July 15, to pay for one completely outfitted Liberty ship each month for the duration.

Liberty Ship Charter

Transfer of six dry-cargo vessels to the Royal Dutch, Greek and Chinese Governments on a bareboat charter basis for the duration of the war was announced by the War Shipping Administration.

Two Liberty ships, the William DeWitt Hyde and the William H. Todd, have been assigned to the Greek Government, and will be delivered at Portland, Maine. The Royal Dutch Government has been assigned the Liberty ship Tobias Lear, to be delivered at Portland, and the motor vessel Cape Sable, to be delivered at Beaumont, Texas. The Liberty ships Henry M. Teller and Michael Casey have been assigned to the Chinese Government, and will be delivered at Richmond, California. Title remains in the United States.

CHAMPION "JOAN OF ARC'S" AT RICHMOND

(1) Champion welder among the thousands of women employees in the four Richmond Shipyards at Richmond, Calif., is Miss Cora Clonts, at Kaiser Co. Inc.'s Yard No. 3. A former stenographer, she won the title of "Joan of Arc" at a contest held recently among representatives from each of the four Richmond yards. (2) Thelma Milton, Yard 1 of Permanente Metals Corp., winner of second place. (3) Kathleen Collins, winner of third place. (4) Virginia Davenport, winner of fourth place. (5) Hilda O'Brien, winner of fifth place.











U. S. Maritime July Shipbuilding Record

Of the 158 new ships delivered uring the month of July, 109 were iberty ships, 16 standard C Types, coastal cargo ships, 14 Maritime formmission tankers, 1 private tanker, coastal tanker, 2 special types, 5 ragoing tugs, 3 ore carriers and 2

concrete barges. West Coast yards delivered 77 vessels, Fast Coast yards 47, Gult Coast 22, and Great Lakes 12

A complete list of the yards and the vessels delivered is as follows:

SHIPYARD	No. of Vessels	Type of Vessel
Alabama Dry Dock & Shipbuilding Comp	any 3	Tankers
Mobile, Alabama American Shipbuilding Company Cleveland, Ohio	. 1	Ore Carrier
Barnes-Duluth Shipbuilding Company Duluth, Minnesota	1	Coastal Tanker
Bethlehem-Fairfield Shipyard, Inc	17	Liberty
Bethlehem-Sparrows Point Shipyard, Inc Sparrows Point, Maryand		C-3 Cargo
California Shipbuilding Corporation Wilmington, California		Liberty
National City, California		Concrete Barges
Consolidated Steel Corporation, Ltd. Wilmington, California Delta Shipbuilding Company, Inc		C-1 Cargo Liberty
New Orleans, Louisiana Federal Shipbuilding & Dry Dock Compar		Special Type
Kearny, New Jersey Froemming Brothers, Inc.	1	C-2 Cargo Seagoing Tug
Milwaukee, Wisconsin Globe Shipbuilding Company		Seagoing Tugs
Superior, Wisconsin Great Lakes Engineering Works	2	Ore Carriers
River Rouge, Michigan Gulf Shipbuilding Corporation Mobile, Alabama	2	C-2 Cargo
Houston Shipbuilding Corporation	5	Liberty
Ingalls Shipbuilding Corporation	2	C-3 Cargo
J. A. Jones Construction Company, Inc Brunswick, Georgia		Liberty
J. A. Jones Construction Company, Inc. Panama City, Florida		Liberty
Kaiser Company, Inc., Swan Island Portland, Oregon Kaiser Company, Inc	•••••	Special Type
Vancouver, Washingon Marinship Corporation		Liberty
Sausalito, California	1	Tanker
Moore Dry Dock Company Oakland, California	3	C-2 Cargo
New England Shipbuilding Corporation South Portland, Maine		Liberty
North Carolina Shipbuilding Company Wilmington, North Carolina		Liberty
Oregon Shipbuilding Corporation Portland, Oregon		Liberty
Pendleton Shipyards Company, Inc New Orleans, Louisiana		Seagoing Tug Seagoing Tug
Pennsylvania Shipyards, Inc Beaumont, Texas	1 2	C-1 Cargo
Permanente Metals Corporation	26	Liberty
St. Johns River Shipbuilding Company Jacksonville, Florida		Liberty
Southeastern Shipbuilding Corporation Savannah, Georgia		Liberty
Sun Shipbuilding & Dry Dock Company Chester, Pennsylvania		Coastal Cargo
Walter Butler Shipbuilders, Inc		C-3 Cargo
Western Pipe & Steel Company San Francisco, California		00000

American Shipyards' Output in 7 Months Over 1000 New Ships

American slepyards during the first seven meetles at 1943 delivered into service 11446 new mer hand vessels aggregating 10,485 5 of deal weight tons, the Maritime Commission amounced on August 4. This tomage, enuivalent to the occan going deadweight tomage of the American Merchant Marine prior to Pearl Harbor, was reached for the year's ship construction schedule at the end of July, when the month's production was 158 new vessels totaling 1,670,700 deadweight tons.

The Commission pointed out that during the seven menth period, ship production has been stepping up to nearly peak capacity, despite the fact that some of the yards have had to convert their facilities for construction from Liberty ships to tankers, which delays delivery slightly.

Total tonnage delivered thus far now passed the halfway point in the scheduled production of more than 19,000,000 deadweight tons of merchant ships and special craft for the armed services by the end of this calendar year.

Cruiser Alaska Launched in East

The cruiser Alaska, first of a new type to be built for the United States Navy, was launched recently at the Camden yards of the New York Shipbuilding Corp. She was christened by Mrs. Ernest Gruening, wife of the Governor of Alaska. Present were five rear admirals and dozens of other Navy officers.

No official statistics on the size, tonnage or armament of the Alaska have been released. She is the first of a class of six authorized by the Navy. The others are to be named Philippines, Puerto Rico, Guam, Samoa and Hawaii. The Navy has announced that these ships will be longer than existing heavy cruisers of 10,000-ton displacement and eightnich guns, but smaller than battle-ships.

Editor Honored

Named after one of the earliest American women journalists, the Liberty ship Mary Mapes Dodge was launched from the Permanente Metals Corporation shipyards at Richmond, California, on August 26.

From 1873 until her death in 1905, Mrs. Dodge edited the famous "St. Nicholas," a magazine now dear to the hearts of collectors of Americana.



Seattle-Tacoma Shipbuilding Corporation's Seattle plant has launched 18 destroyers. The last vessel sent down the ways was the Prichett, launched on July 31. The picture shows two of the vessels at the catifiting wharf. Puget Sound residents have been given an opportunity to watch the new fighting ships on their trial voyages and speed tests. At full speed, they leave a long wake fo foaming water and swells that roar on the beaches.

Destroyer Prichett Launched

Seattle Tacoma Shipbuilding Corporation launched its 18th destroyer on July 31, sending the Prichett down the ways from the firm's big Seattle plant.

The new fighting ship was given the name in tribute to the memory of the late Lieut. Comdr. James M. Prichett, U. S. N., who commanded the United States gunboat Tyler on the Mississippi River in July, 1863, and prevented the capture of the town of Helena, Arkansas, by Confederate forces.

The ship was christened by Mrs. Dorothy Prichett Tucker of Seattletle, a distant cousin of Commander Prichett.



Above: Christened for a naval kero of the Civil War, the Prichett was sent down the ways of the Seattle yard after a colorful ceremony.

Left: Mrs. Dorothy Prichett Tucker, a distant cousin of the late Lieut-Comdr. James M. Prichett, U. S. N., for whom the vessel was named, is shown christening the destroyer at the plant. Mrs. Tucker is the wife of O. A. Tucker, Jr., assistant works manager at Plant A of Seattle-Tacoma and son of O. A. Tucker, general manager of the Tacoma plant. Mrs. Die Richardson is her attendant.

Production of Oil Tankers Up

The Maritime Commission an nounced recently that American ship yards delivered approximately 40 pecent more oil tankers during the firs seven months of this year than during the entire year of 1942.

A total of 88 tankers aggregating 1,013,000 deadweight tons were de livered, compared to 62 tankers total ing 998,299 deadweight tons produced in 1942. The increase in production was attributed in part to the Commission's wartime standardization of design program, including other factors of mass production and prefabrication methods, plus the allout effort by workers and management, throughout the nation's shipyards.

The oil tanker production program since America's entry into the war is being further rounded out by the conversion of 102 Liberty ships into oil carriers. These vessels, after reenforcement of bulkheads, installation of extra ventilation systems, addition of piping and pumping equipment and other alterations, serve as tankers with a capacity of 65,000 barrels each.

Production schedules call for delivery of 511 additional tankers of all types in the next 17 months, "so that by the end of 1944 a total of 661 tankers will have been delivered since Pearl Harbor."

Calship Launches Ten In Eleven Days

Ten Liberty ships in eleven days! That is a record. It was set by the California Shipbuilding Corporation, on Terminal Island, when the S. S. William Kelly slid down the ways on August 18.

Starting on August 8 with the launching of the S. S. Henry M. Robinson, five Liberty ships were launched just a day apart. Then Friday the 13th intervened and broke the chain, with no launching scheduled. However, the next day saw the S. S. Gutzon Borglum take to the water, followed on successive days by the Henry C. Wallace, Joseph Reynolds, Victor Lawson, and William Kelly, for a total of ten ships in eleven days.

This is an average of one ship every 26.1 hours for the period, and it is probably the greatest number of the 10,500-ton freighters ever launched in a comparable time.

Construction of 4000-ton Cargo Vessels Begun

Leathern D Smith Shipbuilding Company of Sturgeon Bay, Wisconsin, has taken initial steps towards actual construction of a fleet of 16, and possibly 18, 4000 ton cargo vessels for the U.S. Maritime Commission, firm officials disclosed recently

According to Admiral Howard L. Vickery of the Commission at Washington, the vessels will be considerably larger than the coastal cargo vessels recently built for Great Britain by the yard. The ships will be single serew and diesel powered.

The company's present plans are to begin actual fabrication of the new freighters in September or October, if steel is made available." stated President Leathem D. Smith upon his return from a conference with the Commission at Washington. Meanwhile work in obtaining the standard offsets for the new ships has begun in the shipyard's mold loft. Copies of the offset table will be distributed by the company to other yards throughout the country that will also build the new freighter.

Henry C. Wallace Launched at Calship

With Governor and Mrs. Bourke Hickenlooper of Iowa, Mrs. Earl Warren and ex-Governor and Mrs. Frank F. Merriam participating in the ceremonies, a new tanker slid down the ways at the California Shipbuilding Corporation in Wilmington, California, on August 15.

The ship was named for the late Henry C. Wallace, Secretary of Agriculture during the Harding and Coolidge administrations, and father of the vice president. It is the 242nd ship launched at the Bechtel McCone yard, and the second of 50 emergency tankers to be delivered under the present contract.

Reduction in Liberty Contract

The Maritime Commission has modified its contract with the Southeastern Shipbuilding Corporation of Savannah, Georgia, reducing from 61 to 52 the number of Liberty ships to be delivered during 1944. The action was taken upon the request of the company, which said it did not believe it could deliver more than 52 vessels and maintain contractual schedules.

World's Record in Destroyer Delivery

Delivery of the heavier type de stroyer Cotten 166 days after the keel laying brought new world's reord in shipbuilding to U. S. Steel's Federal Shipbuilding and Dry Dock Company at Kearny, New Jersey, President Lynn H. Korndorff revealed.

This is the third championship in destroyer construction won by the yard in 1943.

Despite critical shortage in man power, the yard cut out four days in production from its previous mark of 170 days when the Navy destroyer Dashiell was delivered last March 19. Navy figures show that the record is more than 100 days faster than the average time for building such destroyers in this country. Compared with the 1934 naval construction program, it took Federal more than two years to build a destroyer.

"New and improved methods, rather than more work per man, are chiefly responsible for our records in destroyer construction," stated Mr. Korndorff. "Our employees have helped greatly to reduce building time by submitting ideas in scribbled notes and on blanks stuffed into suggestion boxes. Labor - management committees at both the Kearny and Port Newark yards deserve credit for the successful campaigns they have conducted to stimulate suggestions from employees. The committees have awarded war bonds of different denominations to those turning in useful ideas. Certificates of merit likewise have been presented.

BOOK REVIEWS

Shipboard Medical Practice, by W. L. Wheeler, Jr., M. D., Medical Director of the Grace Line, Inc., is a 114-page fully illustrated handbook on ship sanitation and emergency medical aid at sea, published by Cornell Maritime Press, New York; price \$1,00 net.

This book has been written primarily for the many seamen who must not only be able to treat common illnesses but also have a knowledge of practical first aid to meet emergencies at sea.

It is written in simple, nontechnical language, and should be of interest to seamen and all those who want

to know about new first ad procedures and devel prients

Ship Outfitters' Handbook, by Emil M. Hansen; 290 pages fully illustrated, 17 folding plates possible d by Cornell Marston, Press, New York, Price 83 6, net

Beginning at the point where the ship outfitting gang takes over, Mr Hansen first discusses the important subject of ship drawings and the symbols, conventions, abbreviations and shipbuilding terms that make possible a thorough understanding of the drawings from which the outfitting gang must work.

Then, one by one, each of the many jobs of the outfitting gang is carefully explained—installation of ladders, lights, stanchions, hatches, handrails, deck and bulkhead connections, etc. The profusion of illustrations and plates in combination with the text gives a clarity to the entire subject that will aid and encourage the earnest student.

This is a fitting companion volume to the earlier book by the same author, "Modern Marine Pipefitting."

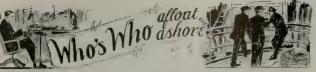
Marine Diesel Manual, edited by Lewis R. Ford; 195 pages: well illustrated; bound in heavy grey paper with black stampings; published by Diesel Publications, Inc., New York. Price 75 cents net.

A very handy book of pocket size, covering in a general way the design, construction and operation of marine diesel engines. Everyone interested in diesels for marine propulsion should have this manual.

Plywoods, by Andrew Dick Wood and Thomas Gray Linn; 365 pages: profusely illustrated; bound in red buckram with gold stampings: published by the Chemical Publishing Co., Inc., Brooklyn, N. Y. Price \$4.00

A comprehensive work covering the many types and varieties of plywoods and their most useful applications in various industries. The remarkable progress of plywood in recent years has created a wide popular interest in the subject, and this book, prepared by two outstanding experts of long experience in the field, is written in a manner that explains, in very simple language, even the most technical phases of the subject.

The architect, the builder, the construction engineer, the professor and the student will all find here the answers to their plywood problems.



Edited by Jerry Scanlon

After serving as manager of the Moore Drydock Company's naval construction program since 1941, Captain Henry M. Gleason, recognized as one of the country's ranking constructors, resigned effective October 22.

Captain Gleason, classmate of Admiral Hepburn who was one-time commandant of the Twelfth Naval district, was on the retired list. However, he was associated with the American-Hawaiian Company when called back to service in 1940. He was in charge of the Office of Supplies and Materials for the Navy until joining the Moore interests. In making known his resignation, Captain Gleason said he planned a rest.

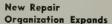
In the first World War, Captain Gleason was in charge of construction at Mare Island. Under his regime, a record for construction of a destroyer hull from keel laying to launching was made in seventeen days, which, at the time, had never been equaled. He was also in charge of the building of the battleship California, and after the close of the war, he was with the old Pacific Mail Steamship Company.



The placing in service of the old liner Yale for the duration will thrill many afloat and ashore. She has just been reconditioned after serving for the last three years as a power and light plant in Kodiak harbor.

In 1937 the Yale was laid up by the Matson Navigation Company. She was among the assets taken over from the Los Angeles Steamship Company.

Built in 1907 for the New York-Boston line, the Yale and her sister, the Harvard, were brought out to the Pacific Coast, and shortly thereafter, went into troopship service across the English channel in World War I. Later both ships came back to the Coast, each wearing two chevrons on her stack. They operated for years coastwise, until the Harvard piled up on the Southern California coast about twelve years ago.



Frank Cavanaugh, partner and general manager of the West Coast Shipbuilding and Drydock Company, San Pedro, Los Angeles Harbor, California, announces that the volume of work at this plant has necessited a number of recent additions to their facilities.

Considerable new tools are going into the machine shop; a new pipe shop and a new tin shop are in course of construction; the paint shop is being enlarged, as well as increasing the firm's office spaces and storerooms.

The company is concentrating on repair work for all types of marine craft. It is interesting to note that West Coast's machine shop is manufacturing stern bearings of all types in quantity.

C. A. Śwain, machinery superintendent, was port engineer of Union Oil Company for many years, under George MacLean, marine superintendent. Tom Keptner, hull superintendent, was formerly in charge of the mold loft at Los Angeles Shipbuilding and Drydock Company.

When Roger D. Lapham, chairman of the board, American Hawai-



Roger D. Lapham

ian Steamship Company, resigned his post as member of the National War Labor Board to become a candidate for Mayor of San Francisco in the November elections, Almon E. Roth, former president of the Waterfront Employers Association and, until going to Washington, president of the San Francisco Council of Employers, was named to his successor.

With the transfer of Captain Charles E. Larsen from Portland to Los Angeles to the McCormick Steamship Company's office, Cecil E. Collins was named by Executive Vice President Charles L. Wheeler, to the position of district manager in the northern headquarters.

Captain Jens Feragen, who served the Fred Olsen Line as port captain in New York, and well-known in East Coast shipping circles, is fast becoming well-known here despite only one month on the job as manager of the San Francisco office. He took the place of Fred W. Kutter, who resigned because of poor health.

The name of a boy, whose family has played a prominent part in California's early history, graces a new destroyer escort in tribute to the heroic part he played as an Ensign in the United States Navy during the battle of the Solomons last November.

Jean Carter Witter, USN, was the hero, the son of Jean C. Witter of the investment firm of Dean Witter & Co. He lost his life on the bridge of the U. S. S. San Francisco.

The War Shipping Administration as completed plans for the use of hen officers and engineers on American ships to meet the acute shortage f licensed personnel. Alien masters re barred from employment under new system, known as "trip ckets" which limits the endorse nent to one trip only, subject to expansion to further voyages. It was xplained that each separate voyage all require an individual endorsement.

This system is expected to avoid he defects of the "Red Ticket" nethod followed in World War No., when the tickets of alien officers were endorsed in red ink for use on American ships. At that time the indorsement was general and not imited with the result there was a urplus of alien officers serving American ships long after the war. This ed to much unemployment of American officers.

The sudden passing of Leonard J. Lucas, 45, former director of publicity and advertising for the Nippon Yusen Kaisya until the war, came as distinct shock to his legion of friends.

At the time of his death he was associated with the overseas branch of the Office of War Information and was also editor of the Shipping Register.

Death at sea abourd his ship came to Captain Alexander McKenzie, aged 57, on August 3 well known in the off-shore and intercoastal trades, Captain McKenzie was born in Scotland and started to sea at the age of 19. He had retired in 1937, but returned when the call for master mariners became acute. He is survived by his widow, Sarah, who resides in San Francisco, and his son, Lieutenant Commander Robert McKenzie, USNR

After serving for twelve years as assistant general manager for the Los Angeles Harbor department, Roy H. Beaton, resigned as of September 1. Much of the progress of the Southern California harbor was due to the foresight and aggressiveness of Mr. Beaton. His duties included those of traffic manager and harbor master.

He resigned to become manager of California Fish Canners, Inc.

Friends of Captain John Alexander Whiteside have been advised the veteran mariner has returned to sea after 10 years on the beach. He entered the naval reserve with the rank of Lieutenant Commander. During the last war, Captain Whiteside was in command of two merchant carriers, both of which were attacked by German U-boats. Until his recent

enlistment he has been State Inspector of small coaft

The death last month of Captain Hjakmar Danskanen, 60, of his home in San Francisco, was reserved with regret by his many scattaring friends alloat and ashore. The veter in steam schooner skipper, later master of some of the largest ships of the McCormick Line, served the concern for 26 years. He is survived by his widow, Mrs. Rosa Danskanen, a brother in New York and three sisters and another brother, who reside in Finland.

When Nelson Andrews passed away at the age of 72, in his Redwood City home, another famed shipwright of the early era of shipping on the Pacific closed a colorful career. Mr. Andrews was a member of the pioneer firm of Bowes & Andrews, San Francisco, one of the oldest shipwright concerns on the Pacific Coast. His widow, Bertha, and a son, survive him.

The Navy announced two well-known San Francisco Bay Area merchant marine engineers had been killed in action during July. They are Chief Engineer Everett J. Kenyon, who resided in San Leandro with his wife, and John Bianchi, first assistant engineer, of Vallejo.

MEETING OF THE MARINSHIP LABOR-MANAGEMENT COMMITTEE AND J. LEWIS LUCKENBACH, PRESIDENT OF AMERICAN BUREAU OF SHIPPING, HELD AT MARINSHIP



(Left, back row): Ray L. Hamilton, Superintendent of Production; E. B. Fox, Personal Asst. to General Manager; Robt. Digges, Administrative Manager; W. E. Waste, General Manager; Charles Exner, U.S.M.C.; W. Warren, A.B.S.; Wm. B. Murray, American Bureau of Shipping; Martin Grab, Carpenters; W. E. Waste, General Manager; Charles Exner, U.S.M.C.; W. Warren, A.B.S.; Wm. B. Murray, American Bureau of Shipping; Noval Architect, and K. K. Bechtel, President.

[Stifting]: Donald Dick, Maritime Commission; Sam Knowles, Sheet Metal Workers; J. Lewis Luckenbach, President of American Bureau of Shipping; Edward C. Lynch, Labor-Management Coordinator, and John Gollins, stage riggers.



Rear-Admiral Vickery and Admiral Land

Plans for the 17th Annual Propeller Club Conference



J. Lewis Luckenbach

John B. Bryan, president of the Pacific American Steamship Association at San Francisco, was elected a member of the war shipping panel of the National War Labor Board.

Supported by Admiral Land and Rear-Admiral Vickery, national officers of the Propeller Club of the United States announce their seventeenth annual conference will be held in New York again this year, despite the war.

Opening October 14 for two days at the Waldorf-Astoria Hotel, the convention will be attended by representatives from all parts of the United States. R. C. Lee of New York, is president, and J. L. Luckenbach is chairman of the American Merchant Marine Committee.

Some of the most vital problems affecting the American shipping industry, now and after the war, will be open for discussion and a policy program will be outlined.

James Adams, member of the War Shipping Administration's legal staff, is now located in San Francisco serving as special counsel replacing Carl F. Farbach, who is retiring to private practice. Mr. Adams, who was formerly located in Washington, now serves the Pacific Coast.

After a long period of service, the last as master of the transport Hunter Liggett, Captain Louis W. Perkins is shoreside, attached to the United States Coast Guard, San Francisco, under Commodore Philip F. Roach as district staff officer.

In honor of the late Captain John Constantine, a Liberty vessel was built at the Richmond shipbuilding yards and christened after the veteran mariner who sailed in and out of this port and was a popular pilot here years ago. He held the honor of being in command of the first merchant ship to pass through the Panama Canal. He had served with both the French and the Americans in its construction.

Fellow mariners expressed their regret to learn of the serious injury suffered by Lya Rumsey, 15-year-old daughter of Captain John A. Rumsey, port captain for the Standard Oil Company of California.

Well-known in Bay region aquatic circles for her swimming prowess, Miss Rumsey suffered a fractured neck while diving into a shallow stretch at the Russian River. She is confined to Franklin Hospital, San Francisco,

URNABOUT

Under a new plan British Metchant avy officers are flying high above on vessels in channel waters and AF pilots are sailing on the concess. The switch is part of the profum arranged between the services that their men in off-duty hours aviget acquainted with the working of living routine of the others.

Merchant vessel officers go as obrivers on planes flying guard over the convoy lanes, and get a general lea of the constant vigilance delanded of air escorts. When R. A. men repay the visits, often as uests of the same skipper who flew ith them, they join a ship at one hannel port, disembark at the next.

Because of the numerous reports y mariners calling at Pacific Coast orts, losing weeks of valuable sea ime because of the loss to threves of heir shipping papers and money, an ppeal has been issued to have them leposit their valuables with their unons or with the United Seamen's Service for safe keeping. As well is the personal loss, it is pointed out that these seamen's belongings may be valuable information to enemy igents.



John G. Seiler

John G. Seiler has been elected vice-president of Tube Turns, Louis-ville, Ky., manufacturers of Tube-Turn Welding Fittings and Flanges. Mr. Seiler will retain his duties as sales manager of the company.

A cheerful note telling of adventures galore on off shore assignments and annusing incidents of a sullor's experience was contained in a letter received by Attorney Walter J. Walsh, former president of the Mariner's Club from Stanley E. (S.E.A.) Allen, now a Lieutenant Commander in the Navy

"Cap" Allen, as he was better known when serving with the marine department of the Standard Oil of California, was one of the first reserve men to be called into service. His family is residing in San Francisco.

Although never identified with commercial shipping, yet one of the best known figures in the world of yachting on the Pacific Coast, death came to Arthur F. Rousseau, age 58, on August 5, in Stanford Hospital, San Francisco.

He raced and defeated all contenders in the famed "R" class on the Coast. He was one-time commodore of the Corinthian Yacht Club, and regarded as one of the best small boat sailors hereabouts.

Known as one of the West's outstanding building and contracting figures, among the structures he designed and erected were the El Cortez, Chancellor and Gaylord hotels, as well as many of the largest housing units in the shipyard centers of Northern California.

Alfred P. "Fred" Hammond, onetime a leading figure in Pacific Coast shipping, died August 2, in Palo Alto, after an illness of eight months. Earlier in the year he had undergone an operation.

Born in Minneapolis, Minn., in 1884, Mr. Hammond was once Pacific Coast manager for the Luckenbach Steamship Company. He was also president of the Waterfront Employers' Association during the hitter 1920 strike.

When he left the Luckenbach Lines in 1921, he was for a time head of the Atlantic, Gulf and Pacific Steamship Co., and also served with the California and Eastern Steamship Company and the Charles Nelson Company. Until shortly before his last illness he was with the Acme Fast Freight Company.

He is survived by his widow and a daughter.



Captain Edward Macauley

At a talk before the Los Angeles Chamber of Commerce, Captain Edward Macauley, USNR, U. S. Maritime Commissioner and Deputy Shipping Administrator, stated it was regretable that most of the Merchant Marine's record cannot be told now.

"The heroic feats of the men in the Merchant Marine cannot be revealed at this time because there are security reasons," he stated. "Proof that our Merchant Marine is fighting and fighting well is that we have armies overseas from Iceland to North Africa, from Sicily to the Solomons, an dthose armies are getting food and weapons because American merchant ships are getting through.

A happy choice was the selection of H. H. Pierson, Pacific Coast manager of the De La Rama Steamship Company, to succeed Edward H. Harms as vice-president of the San Francisco Marine Exchange. Mr. Harms, prewar operation manager for the McCormick Steamship Company, went into the Coast Guard with the rank of Commander, only to secure a leave to accept the post of Southern California district manager for the WSA.

Friends are advised that K. D. Mc-Kenzie, formerly assistant general passenger agent for the Alaska Steamship Company, Seattle, has been promoted to Lieutenant Colonel. He was elevated for meritorious services from the rank of Major. MARINE DEPARTMENT
A E T N A I N S U R A N C E C O.
Q U E N I N S U R A N C E C O.
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MARINE EXCHANGE NEWS

(Continued from page 87)

quest of the Navy, and has been cleared by the Bureau of the Budget. Its intent is to prevent interference with Naval operations and other Navy activities which would result from detaching large members of Navy personnel to testify. The tremendous increase in the number of and operated by the Navy Department is bound to result in a corresponding increase in the number of collisions, as well as other damage claims and accompanying litigations.

The bill will be vigorously opposed.

The "Winehaven Case": The Exchange is strongly interested in the "Winehaven Case," which tests the claims of the U. S. Government to title in tidelands.

After taking title to 412 acres of land at Winehaven, on the shore of Contra Costa County, on behalf of the Navy, the United States Attorney General now seeks to avoid payment for that part of the area acquired which lies below the line of mean high water. The basis for the action. as indicated in a brief filed with the United States Court of the Northern District of California, is that the navigable rivers of the United States are "the public property of the nation," and that any private rights in such streams are subservient to the dominant power of Congress to improve navigation. It is further contended that this servitude extends to the whole expanse of the stream, including lands alternately covered and left bare by average fluctuations in the flow of the stream; in other words, to all lands below the ordinary high water mark. The brief also cites a number of decisions giving the Government the right to use without compensation submerged land for purposes which are an aid to navigation, as well as "to regulate commerce.

The Attorney General's contentions are opposed in a brief prepared

and filed by W. Reginald Jones, attorney for the Port of Oakland, who in this case is acting in the capacity of special counsel for the American Association of Port Authorities.

He states that: "The Government's position is untenable in that lands of the character here involved belong to the State and their grantees, and that such ownership is a beneficial one; that the public easement for navigation, and the right to provide aids to the navigability in furtherance of that easement do not extend to the expropriation of lands under navigable waters to the exclusive possession of the Federal Government: that the authorities and, as might be expected, reason and the practical consequences deny any such right; and even if all the foregoing were untrue, it nevertheless would take an act of Congress specifically declaring such sequestration, which step Congress in its wisdom has not attempt-

THE AMERICAN MERCHANT MARINE

(Continued from page 74)

later yards are all approaching this goal, so one can imagine the huge number of Liberty ships which we may expect to have incorporated in our merchant marine by the end of this year.

I am glad that consideration has been given and contracts have already been let for the building of other type vessels. A merchant marine composed primarily of Liberty ships will not constitute that wellbalanced fleet which is necessary to give the United States its proper place on the high seas. Liberty ships have been and are fulfilling a purpose. They were designed for rapid construction to fill the demands of an emergency, and they are doing that admirably. In the last two great wars, the United States has seen the necessity for an adequate merchant marine. The Liberty ship has gone far to save the day in this crisis. However, we will have post-war conditions to meet which will need ships of varying and faster types that will fit the extended services to far lands, which I hope and expect our merchant marine will be encouraged to enjoy. Ships of the Liberty type are generally too large for tramping, and while we hope ships of this size and type can and will be used to their fullest degree, they will not necessarily meet post-war competition. The Victory ship is one answer, and I earnestly urge a continuing analysis of future designs in full cooperation with owners who know their trades and who are familiar with port conditions.

The main thing I would like to stress is that our merchant marine should not be regarded as a wartime expedient, but rather as an integral part of our national life. The longrange program started in 1936 by the Maritime Commission has benefited this country to a degree which only history can evaluate. It is time that we learned from experience that the merchant marine is vital to our national safety.

Auxiliary Schooner Scheme Abandoned

Capt. Alexander M. Peabody, president of the Puget Sound Navigation Company, is back in Seattle after a journey of 30,000 miles by air and land which took him nearly to Cape Horn, southernmost tip of the South American continent.

Captain Peabody made the long journey as president of the Inter-American Navigation Company, which planned to build, purchase and operate wooden auxiliary - powered sailing vessels in the Western Hemisphere trade. He was accompanied by Palmer Scott, president of the Palmer Scott Company of New Bedford, Mass., a wooden shipbuilding corporation. As a result of the survey, the company decided to abandon plans for operation of a fleet of wooden ships in the inter-American trade. The principal reason is the lack of materials in South American ports where it was planned to build the vessels.

Running LIGHTS

Who When Where



Edwin H. Hannay to New Post

With 46 years of shipbuilding wisdom behind him, Edwin H. Hannay, the new general superintendent of the yard at Los Angeles Shipbuilding and Dry Dock Corp., is now responsible for all production operations of both new construction and repair yards. He is recognized as one of the outstanding hull constructors in America.

Formerly superintendent for the Kaiser interests at Yards No. 2 and No. 3 at Richmond, he was largely responsible for the laying out of these yards.

Born in San Jose, he grew up on his father's ranch in the Santa Clara valley. At fifteen, the one-time executive of the Union Plant of Bethlehem, apprenticed as a shipfitter at the Union Iron Works in San Francisco and stayed with that particular company, later called Bethlehem Steel, for 31 years; 22 years at San Francisco, one year at the Alameda Branch and 8 years as General Superintendent of the San Pedro Bethlehem Steel.

Later he became general superin-

tendent of Pacific Coast Shipbuilding Co. at Bay Point, and also worked at both Bremerton and Mare Island Navy Yards.

Mr. Hannay's home is in San Pedro, a short distance from the yard, where he spends most of his time, and, likely as not, you'll find him in one of the ships on the ways rather than in his office in the Administration Building. His intense interest in ships and the men and women that build them constantly keeps him amongst the crew and their ships.



Victor B. Stewart

SOUTHERN CALIFORNIA BOATYARD LAUNCHES NEW OFFICES

Recently christened were the streamlined executive quarters of the remodeled offices of Fellows and Stewart, Inc., of Wilmington, California, builders of U. S. Navy airplane rescue boats and subchasers.

Floral tributes were paid by loyal employees to Southern California's veteran boat-builder, Victor B. Stewart, president, in appreciation of all his kindness and cooperation in their behalf, and to Joseph "Rusty" Fellows, Jr., secretary and treasurer of the firm.

Other members of the executive staff, Homer Evans, vice president and superintendent of the yard, and William Braum, assistant superintendent, have just reason to smile, in fact, gloat, over the way production schedules are running, over the number of sub-chasers being completed, over the new airplane rescue boats that will soon hit the water, and over the smoothly functioning labor units

Credit for this success is also due the following officials: William H. Johnson, assistant secretary, and Frank R. DeLong, personnel and publicity manager, and members of the executive personnel, Gordon Hooton, chief coordinator; Jack Bommhardt, chief engineer; O. L. Michael, mgr. controlled material; Tom Hamilton, expeditor; and Joe Werkman, mgr. F. & S. storeroom.

DIAMOND YEAR FOR NACO

In commemoration of the 75th Anniversary, the National Malleable and Steel Castings Company of Cleveland, Ohio, has published a 36-page book portraying the history of the organization from its incorporation in 1868, then called the Cleveland Malleable Iron Company, down to the present day, in which it describes the pioneering of the production of malleable iron into the Midwest

Its founders, Alfred A. Pope, John C. Coonley, J. H. Whittemore, and Bronson B. Tuttle established other iron foundries in Chicago, Illinois; Indianapolis, Indiana, and Toledo, Ohio, which, in 1891, were combined to form the National Malleable Castings Co., the company name which later changed to the present in 1923.

National headquarters and research laboratories are maintained in Cleveland, while works are situated in Cleveland, Cicero and Melrose Park in the Chicago area; Indianapolis and Sharon, Pennsylvania. Sales offices operate in Cleveland, Indianapolis, Chicago, New York, Philadelphia, St. Louis and San Francisco.



Joseph "Rusty" Fellows, Jr.



William Braum and Homer Evans

hipbuilder-Yachtsman

Leathern D Smith shipbuilder of turgeon Bay, Wisconsin, is the roud possessor of a sailing sloop, he Halt Moon, formerly owned by ames Roosevelt sen of President Rousevolt This boat, built in 1934 by Crosby Yacht Budding Company, t Osterville, Mass, for James Roose celt, was cruised by him for three rears all over the Atlantic Coast and hen sold to V S Grundy, an indusrialist of Trenton, N. J. Mr. Grundy ruised her for five years, during which time he placed her in at least two ocean races Mr. Grundy then sold the sloop to Mr Smith in 1942, and she is now a familiar and very pleasing sight on the waters of Green Bay and Northern Lake Michigan. She has twice placed in the Menommee Marinette annual 100 mile race.

The crew of the Half Moon in this year's competition included her owner, Mr. Smith; Lieut. Comdr. E. A. Anderson, supervisor of shipbuilding at Sturgeon Bay; E. A. Washburn, firm executive; Richard Stern, naval architect at the Smith shipyard; and Lieut. Comdr. J. W. Magan, Jr., of Manitowoc, Wis.



The Half Moon

Crew (left to right): E. A. Washburn, Smith Company official; Lieut. John C. Rowe, Sturgeon Bay: Leathern D. Smith, owner the sloop; Richard Stearn, naval architect at the Smith firm; and Lieut. Comdr. E. A. Anderson, assistant supervisor of shipping at Sturgeon Bay.



Somerville Joins Atkins-Kroll

George N. Somerville, noted Pacific Coast Diesel engineer, and for many years, on the executive staff of Atlas-Imperial Diesel Engine Company of Oakland, California, has now joined Atkins Kroll, well known pioneer merchants and exporters of San Francisco.

The career of Mr. Somerville embraced the following positions: 1916 to 1919 chief draftsman and later chief engineer of the Skandia Pacific Oil Engine Company of Oakland, California; 1919 to 1920 chief engineer of the Central Motor Mfg. Co. of Tokio, Japan; 1921-1926, chief engineer and assistant manager, Standard Gas Engine Company of

Oakland, California, and 1926-1943 successively Sales Engineer, Chief Engineer, Sales Manager, Export Manager, and Vice President of Atlas Imperial Diesel Engine Company. For many years he has been an active member of the American Society of Mcchanical Engineers and served 1942-43 as Chairman of the San Francisco Local Section of that society.

In his new connection, he will build up a prosperous engineering department in the organization of Atkins-Kroll. He has already established connections with a number of manufacturers, among whom are: Hilliard-Corporation, Elmira, New York, makers of oil reclaimers, purifiers, and filters; Federal-Mogul, Marine Division, Detroit, Michigan, makers of propellers, and Borden Metal Products Co., makers of Safety Steps and Gratings.

The new department of Atkins-Kroll, will be handling a wide line of power plant, marine and industrial equipment.



Wolcott E. Spotford presenting Maritime Merit Award to Lake Shore Engineering Co.

Lake Shore Gets "M" Award

In the presence of officers and employees of the company, hundreds of townspeople, representatives of the armed forces, and a large delegation of iron and copper mining executives and officials of war plants in the Great Lakes area, the Lake Shore Engineering Company, on Saturday, August 14th, was presented with the Maritime "M" pennant, the Victory Fleet Flag, and labor merit badges for all its employees by Wolcott E. Spofford, regional director of construction for the U. S. Maritime Commission, who lauded the company and its "soldiers in overalls" for outstanding achievements in the production of cargo winches and other marine equipment for Victory ships.

The award was acepted by F. A. Flodin, president of Lake Shore, who voiced his appreciation of the individual contribution of each of the company's employees toward the war effort.

Wm. Powell Plants Receive the Award of Merit

The Maritime Commission's Award of Merit was recently presented to both plants of the Wm. Powell Company of Cincinnati for outstanding performance in the production of valves not only for the ships of the Victory Fleet but also for the many industries engaged in making the machinery, material and equipment for these ships. This company had already received the Army-Navy "E" Award.

The presentation of the Maritime Commission's Award was made at

an impressive ceremony in the yard of Plant No. 1. Colonel Willard F. Rockwell, Director of Production, United States Maritime Commission. presented the "M" Burgee, the Victory Fleet Flag and the Labor Merit Badges. The acceptance speech in behalf of the company was made by George E. Weitkamp, first vice president and secretary. The Labor Merit Badges were accepted by James Coombe, president The Wm. Powell Company; Oliver F. Gang, vice president, The Wm. Powell Company, representing management; Fred Phillips, Oscar Karhoff, Fred Weber and Edward Bootes, president Local 1858, United Steel Workers of America.

C.I.O., who made the speech of acceptance on behalf of the workers.

The Honorable James G. Stewart, Mayor of Cincinnati, made a stirring speech in which he expressed Cincinnati's pride in the War Production record of the Wm. Powell Company. This company has been operating for 97 years. During that time it has developed a remarkably complete line of valves to meet the demands of every branch of industry.

Takes Over New Line

Harry W. Parsons Engineering Company are now representing Woodruff & Edwards, Inc., of Elgin, Ill. This is one of the largest and most modern foundries in the Middle West, and specializes in gray iron, semi-steel, brass, bronze and alloy castings. It has an outstanding reputation for quick deliveries of castings.

Second "E" To Macwhyte

The second award is recognition by the Armed Forces for "continued and determined effort and patriotism." It covers the period from the date of the first award (in the case of Macwhyte Wire Rope Company November 21, 1942) until the time of the second award (in this case August 21, 1943).

The second award consists of an Army-Navy "E" Flag similar to the first one but with the addition of one white star in the red field.



Men and Machines Working Together for Victory

Most of us have seen the poster of the soldier, subor and working man, aptioned "Man Working Together, and that's what they're doing at the Enterprise Ingine and Foundity Company of San Francisco.

The men and the women, too of the firm have mer the test. With out exception, from the mexperienced apprentice to the executives, the company's personnel has risen to new heights of accomplishment.

At an age when most young men are just getting a foothold in their chosen profession, Charles Hoehn, Jr., now holds the important position of manager of the Foundry Division of the company, and is ably qualified for his new job. He has been asso ciated with the company for 15 years. He began learning the mold ing trade during vacations while still in grammar and high school. He knows the sales end of the business as well as the foundry and shops, and was promoted from salesman to head of the Enterprise sales force in 1940; from this position he was promoted to his present post the early part of this year.

Another key man with the organization who has risen to his country's need is Ed Dickman, newly appointed Foundry Sales manager. Mr. Dickman is a pioneer of the firm, having been with them for 25 years. He has the tremendous job of contacting hundreds of customers, estimating orders, and expediting these orders so that costly delays can be eliminated and contract delivery dates kept to schedule.

The third is Fred T. Williams, appointed plant manager of the South San Francisco Foundry. Mr. Williams has deserved the well-earned promotion, backed by many years'

training and experience.

JOSLYN & RYAN HOLD ANNUAL PICNIC

Josiyn & Ryan, San Francisco's big organization of Naval Architects and Marine Engineers, held their annual planic and field day on Sunday, August 15, and as indicated in these four views a grand time was had by all!

A range of athletic contests feafured the day's program, while the J & R boys and girls played strenuously in advance of a sumptuous picnic spread.

Chairman of the picnic was Carl Lindberg, whose committee handled all details smoothly and efficiently.

The PMR "trophy" was won by Mrs. Lucy Reed. Friends of the organization will recognize Mr. Joslyn in the lower two views.

Below (left to right): Ed. Dickman, Charles Hoehn, Jr., and Fred Williams of Enterprise.













JACK LONDON HONORED

Lovely titian-haired Susan Hayward is shown above presenting a plaque to Captain George E. Joyce, captain of Marinship Corporation Liberty ship S. S. Jack London, recently delivered into the Maritime Service.

DECORATED FOR SERVICE

Captain Wm. Tooze is presenting Commander A. S. Ford a medal for ten years' faithful service. Taken at U. S. Maritime Service Officers' School, Alameda, California.



Permanente Metals First Members of Maritime 250 Club



The ceremonious raising of the Maritime pennant.

(Top right): Bill Mahl, oldest employee and Anchorman of Yard No. 2, and C. W. Flesher.

(Center): Aimel Bouley, first employee and Anchorman at Yard No. 1; T. A. Bedford, Jr., Assistant General Manager, Permanente Metals Corp.; M. G. Vendermeude, Executive Assistant Manager, Yard No. 1; Russ Brown, General Superintendent, Yard No. 1; C. P. Bedford, Vice President and General Manager; Carl W. Flesher, Regional Director, U. S. Maritime Commission; Ray Wadell, Chief Plant Police, and Paul DePoister, of Yard No. 1.

(Right): Bill Mahl of Yard No. 2; T. A. Bedford, Jr., Asst. Gen. Mgr., Permanente Metals Corp; J. C. Mc-Farland, General Superintendent, Yard No. 2; C. P. Bedford, Vice President and General Manager, and Carl W. Flesher, Regional Director U. S. Maritime Commission.



GOOD LUCK OMEN TO **SHIPBUILDER**







The Lucky Tug

Thirty-first ship on the 31st day of the month is a good luck omen. The charm fell on Hodgson-Greene-Haldeman Shipbuilders of Long Beach, when they launched the last of five U. S. Army tugs on July 31.

The 31 vessels included twenty 50-foot motor sailers, U. S. Army, one 40-foot juggling tugs for the U. S. Army and five 180-foot wooden barges for the U.S. Maritime Commission, the first of which was christened by Mrs. Carl W. Flesher.

Douglas fir and oak went into the building of the five U. S. Army tugs. They are equipped with two diesel engines, 126 feet overall, twin-screw, plenty of horsepower and a plenty rugged little tug. These are the first of this type ever built in the Long Beach Harbor.

Among the charming sponsors to crack a bottle of champagne against a bow were Mrs. Burch E. Greene, wife of one of the company's owners, who on June 10 christened U.S. Army Tug LT-151, the first of the five built. On July 31 Mrs. Arthur B. Bordley. wife of Lieut. Bordley, Chief of the Ninth Zone Transportation Supply Branch, Los Angeles, and administrative officer of the yard, sponsored the lucky U. S. Army Tug LT-155.

INITIAL MEETING OF NAVAL AFFAIRS COMMITTEE

Appointed by President Ernest Ingold of the San Francisco Chamber of Commerce on authorization of the Board of Directors, the new Naval Affairs Committee held its initial meeting Friday noon, September 3, in the Stock Exchange Lunch Club, San Francisco, as guests of the Chairman, Mr. E. J. McClanahan, Vice President, Standard Oil Company of California.

The San Francisco Chamber's Naval Affairs Committee will represent San Francisco as a community in its relations with the United States Navy and will assist the Navy in its problems insofar as they may be resolved by a civilian approach. At its organizing meeting Friday the Committee determined on a tentative program of action. Its first order of business will be to visit Vice Admiral I. W. Greenslade, Commandant Twelfth Naval District and Western Sea Frontier, to acquaint him with the committee's set-up and to invite. him to avail himself of the Naval Affairs Committee's facilities. Following this initial step the committee looks forward to visits covering the naval establishments in the San Fran-



cisco Bay Area-now the greatest naval base in the world.

The committee personnel:

Chairman: Mr. E. I. McClanahan, Vice President Standard Oil Company of California, 225 Bush Street. Secretary: Mr. Wm. L. Montgom-

ery, Manager World Trade Department, San Francisco Chamber of Commerce, 333 Pine Street.

Mr. Oscar J. Beyfuss, Tanker Charterer, presently attached to United States Navy in a civilian capacity, 181 Edgehill Way.

Mr. Richard D. Brigham, Vice President Anglo California National Bank, 1 Sansome Street.

Mr. Leland W. Cutler, Vice President Fidelity & Deposit Company of Maryland, 405 Montgomery Street.

Mr. Marshall Dill, 24 Bluxome Street.

Mr. Hugh Gallagher, Vice President Matson Navigation Company and President, Propeller Club of the United States, Port of San Francisco, 215 Market Street.

Mr. Chalmers Graham, Admiralty Attorney, 310 Sansome Street.

Rear Admiral Alexander S. Halstead, U.S.N., retired, Pacific Union Club.

Mr. J. S. Hines. Publisher, Pacific Marine Review, 500 Sansome Street. Mr. Edward C. Lipman, General Manager, The Emporium, 835 Mar-

Mr. Dan E. London, Manager, St. Francis Hotel, Geary and Powell

ket Street.

Mr. J. Ward Mailliard, Jr., Mailliard and Schmiedell, 230 California

Mr. S. R. Newman, District Traffic Manager, United Air Lines, Post and Powell Streets.

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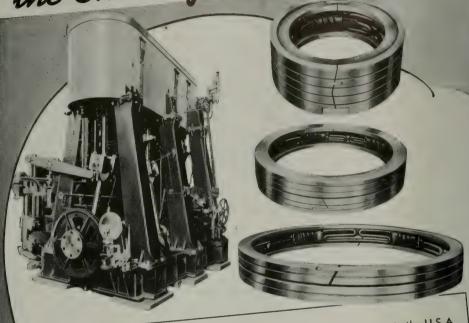
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- **★ Coffin Pumps**
- **★ Pedrick Piston Rings for Diesel Engines**
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Yes sir, we got that pile in three hours today with our Sharples Centrifuge. Keep that Sharples operating and our oil will always be free from dirt and grit. We must protect our machinery.

> This illustration is an actual photograph taken of the simple cleaning of a bowl of a Sharples Marine Oil Purifier on a ship in Pacific Service.

> It is needless to emphasize to this Chief Engineer that he needs his Sharples Centrifuge.

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Boiler is ready for operation immediately after application of Brickseal. Heat of furnace vitrifies Brickseal permanently into all pores, cracks and joints, and forms a highly-glazed, monolithic coating. Brickseal cannot crack, peel or blister due to sudden temperature variations because it remains semi-plastic until boiler cools.

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THE STOUT LCI—(Landing Craft Infantry)—a new member of the United States Navy which will be used in great numbers to land troops and equipment. Through heavy seas these crafts will make their way to invasion objectives. Manned by Navy and Coast Guard men, they are designed to play an important role in bringing Victory to the United Nations.

Webster-Brinkley is justifiably proud of its part in this tremendous production job. Where speed was the paramount factor, this organization unhesitatingly took on the responsibility of turning out the specified electrical steerers with a deadline handicap. From blueprints to delivery long BEFORE the date required . . . this is one of the Webster-Brinkley performances that brought the Army-Navy "E" award.

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've been in cosier places than this crow's nest, what with the wind slicing in and the icy spray needling into my face. But on this Murmansk route, we stand our watch—and 'like it'. We may not talk much about those tanks below decks, but we keep thinking what it means to get them through.

"You're probably sitting behind an office desk right now instead of facing a North Atlantic gale, but you're on watch too.

"You can make it your business to spot Axis rumors, just as I spot Axis planes and subs. You can nail scare stories about our allies, and whispers from Berlin that sometimes find a scatterbrain or two to pass them on.

"In your business and among your friends, you

can speak out against everything that puts off the day we win. I wish I had the chance. I'd have a few words to say to hoarders, to rationchiselers, to absentees on war work. (As if we could lick a bunch of gangsters by taking time off!)

"I'm not complaining. You're not either. We know that we're in this thing together."

We of The Babcock & Wilcox Company salute the heroism of the men of our merchant marine as well as those who sail the seas in our armed services. It is a privilege for us to make the boilers which serve them.

We pledge ourselves to "keep up the steam" at home on the production lines.

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Starting September 9th, your Government will conduct the greatest drive for dollars from individuals in the history of the world—the 3rd War Loan.

This money, to finance the invasion phase of the war, must come in large part from individuals on payrolls.

Right here's where YOUR bond selling responsibilities DOUBLE!

For this extra money must be raised in addition to keeping the already established Pay Roll Allotment Plan steadily climbing. At the same time, every individual on Pay Roll Allotment must be urged to dig deep into his pocket to buy extra bonds, in order to play his full part in the 3rd War Loan.

Your now doubled duties call for these two steps:

1. If you are in charge of your Pay Roll Plan, check up on it at once—or see that whoever is in charge, does so. See that it is hitting on all cylinders—and keep it climbing! Sharply

increased Pay Roll percentages are the best warranty of sufficient post war purchasing power to keep the nation's plants (and yours) busy.

2. In the 3rd War Loan, every individual on the Pay Roll Plan will be asked to put an extra two weeks salary into War Bonds—over and above his regular allotment. Appoint yourself as one of the salesmen—and see that this sales force has every opportunity to do a real selling job. The sale of these extra bonds cuts the inflationary gap and builds added postwar purchasing power.

Financing this war is a tremendous task—but 130,000,000 Americans are going to see it through 100%! This is their own best individual opportunity to share in winning the war. The more frequently and more intelligently this sales story is told, the better the average citizen can be made to understand the wisdom of turning every available loose dollar into the finest and safest investment in the world—United States War Bonds.

BACK THE ATTACK



With War Bonds!

This space is a contribution to victory today and sound business tomorrow by

PACIFIC MARINE REVIEW



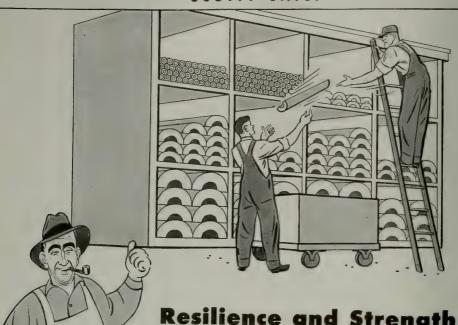


The new pipe plant of the U. S. Pipe & Mfg. Co. in South San Francisco, purchased last June, completely rebuilt, is now in full production on all pipe work formerly done in the San Francisco plant.

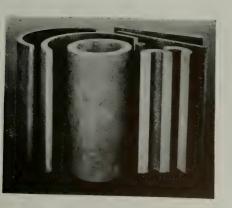
The South San Francisco plant has additional capacity for either complete pipe systems or for fabricated pieces which can be manufactured on a production system.

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unibestos is available in Standard material, for temperatures up to 750°; Super, with a temperature limit of 1200°; Combination, with a temperature limit of 1200°. These temperature limits permit the use of one material at maximum efficiency for a wide range of purposes. unibestos is available in half sections up to 30" pipe diameter and from 32" to 60" in quadrants from 34" to 5" in thickness. Standard and Super are available in single layer construction with provision for expansion in piping, where required.



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♠ This bronze plate is installed in every Ingalls ship.



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Shunt tracks along which a boot may be carried to a selected position on the level. Besides the railway itself and the shunt tracks, there are three transfer tracks enabling the marine railway to accommodate six vessels at one time. A 20-ton crane, to travel alongside the shunt tracks, is used for readir work.

Unique Marine Railway

A two-million-dollar marine railway, largest side-haul type in the world, has been completed at the Commercial Iron Works plant on the Willamette River, Portland, Oregon. Built for U. S. Navy by the Crandall Engineering Company, Boston, Mass., the side-haul railway will be able to take care of ships up to the size of destroyers.

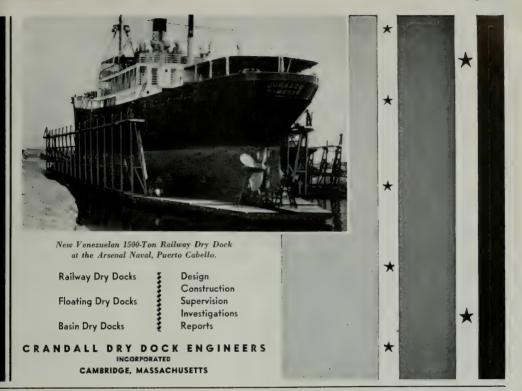


Steel and chemically treated wood combine to make this twelve-acre railway permanent construction—to accommodate both wars and peace-time vessels. In addition to general repair work, the marine railway will be used for both final and routine painting of naval and commercial vessels before delivery. The railway proper consists of 24 steel rails which slope at a one-to-six grade for 329 feet into the Willamette River. The slope ends at a depth of 40 feet below mean low-water level. Twelve cradles mounted upon the railway wheels may be moved up and down this track, all at once or as few as necessary, depending upon the length and weight of ships handled.

On the tracks - which run 300 feet back from the river edge—are shunts which carry the transfers (steel-framed carriages on wheels which can be run off to the side on tracks laid out for ship repair berths). Moving parts are powered by a battery of 200-horsepower electric motors.

When a ship is brought to the plant for repairs it will be floated into the basin in front of the railway and made fast on the cradles. It will then

Side-haul marine railway shown during construction. The diver in the foreground is preparing to cut treated piles to an inclined grade with compressed air saw. Structural lumber shown in the picture is all Wolmanized. The completed project occupies a tract of land covering about 12 acres.



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Tens of thousands of Danforths are in service on Maritime Commission, Navy, Army and Coast Guard craft...they save weight and steel and are easier to handle with lighter gear.

The Next Ship You Design or Build Can Be Danforth Equipped.



Completed Navy tug ready for christening ceremonies after being constructed on marine railway at Portland. Level area seen beyond the vessel contains 12 sets of tracks. Moving parts on the railway are powered by a battery of 200-horsepower motors.

be hauled up the inclined track. Reaching the top of the incline, shunt and ship will be propelled along level tracks until they are opposite a vacant repair berth, where the transfer, bearing the vessel, will be hauled off to the side.

Varying depth of the water and narrowness of the Willamette River make it better suited to a side-haul than an end-haul railway. An end-haul railway would have to go out under water to the full length of vessels docked there. Also, more vessels can be handled on a side-haul.

The Portland marine railway, one of more than 180 built in all parts of the world by Crandall Engineering Company, was begun in July, 1942, with the driving of piling for the foundation of the railway. A total of 2,534 piles, ranging from 30 feet to 75 feet in length, and vacuumpressure treated with Wolman salts preservative, make up the foundation of the railway. Piles were treated at the Wauna, Oregon, plant of American Lumber & Treating Company. and were cut to an inclined grade by divers using compressed air saws. The twelve tracks were constructed on land, then sunk and fastened to pile caps (also set in place by divers). The section of the track from 0.0 elevation to the head wall was constructed entirely of Wolmanized lum-

While the marine railway was being built, the transfer tracks were used for construction of large oceangoing tugs, which were moved off the transfer tracks, along the shunt tracks, and onto the railway for side launchings. One of these—a naval tug—was launched on Washington's Birthday. The boat was christened by Mrs. Thomas F. Sullivan of Waterloo, Ia., whose five sons were lost in the sinking of the U. S. Cruiser Juneau, torpedoed off the Solomon Islands.



Glass and Copper Antenna for Life Rafts

A kite string of glass yarn is used with the box kite that carries aloft the antenna of the portable handgenerator radio transmitter developed by the Army Air Forces to summon help for fliers forced to make crash landings at sea.

The complete transmitter kit for use on aircraft life rafts includes the sending set, an ordinary cloth and wood-frame box kite, an antenna consisting of very fine copper wire wound around the glass kite string, two balloons and capsules of compressed hydrogen. The balloons, inflated with the hydrogen, can be used to carry the antenna aloft in the event of a calm.

Glass yarn is used as the kite string because of its great strength in proportion to its weight, and because it will not rot or otherwise deteriorate from the effects of salt water, tropic sunlight, rain or dampness. The yarn is twisted and piled from continuous filament glass fibers, which can be drawn to great lengths.

The transmitter is so constructed that the operator needs no knowledge of radio or code. When the hand crank is used to generate power, the transmitter automatically grinds out the SOS signal on 500 kilocycles, the international distress frequency.

Glass Fiber Curtains For Navy Ships

Noninflammable Fiberglas curtains, which the housewife can no longer buy in the stores because Fiberglas textiles of all kinds are urgently needed for war purposes, are replacing certain metal doors on the Navy's fighting ships and auxiliary vessels.

The same properties responsible for their popularity in the home have led to their use as a means of saving weight and critical metals in the ships of the U. S. Navy. They will not burn. Salt air and dampness don't affect them. They won't rot or mildew, and moths can't eat them. When they become soiled the surface can be cleaned by wiping with a damp cloth.

Before the war Fiberglas yarns were being used to weave damasks, brocades, satins, taffetas and nets to add to the attractiveness of the American home. Today these yarns are being employed to weave not only shipboard doorway curtains but shields for million-candle-power reconnaissance flares, and tapes, braids and cloths used as electrical insulation in ships, tanks and planes.

So great is the demand for Fiberglas textiles for war purposes that, as of April 1, they were listed as a critical material, allocated for approved end uses only, upon certification of applications by the War Production Board under Conservation Order M-282.

Vital Marine Castings Vital Marine Castings Vital Marine Castings Vital Marine Castings Produced CENTRIFUGALLY by SHENANGO-PENN

MARINE engineers have found that Shenango-Penn centrifugal bronze castings can be depended upon for greater strength and a fine even grain structure not obtained by ordinary casting methods. A wide range of sizes is available, including tubular bar or cylinders from 2" to 26" O. D. and up to 26 ft. in length.

Call on your nearest Shenango-Penn distributor for complete information on centrifugally cast propeller shaft sleeves, stern tube bushings, cylinder and pump liners, bearings and special castings. His advice on marine castings may save you production time and reduce your costs. The Shenango-Penn Mold Co., Dover, Ohio.

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Bendix-Marine* Automatic Fire Alarm System stands constant watch

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Products of this division are vital members of "The Invisible Crew" — precision equipment which 25 Bendix plants from coast to coast are speeding to world battle fronts.



MARINE DIVISION

Brooklyn, N. Y.

Hot off the Press

CATALOGS OF TODAY BECOME TECHNICAL HANDBOOKS OF TOMORROW

Mechanical Telegraphs, gong and voice tube systems, a brochure by Bendix Aviation Corporation, Marine Division, Brooklyn, New York, describes the construction, operation, installation and maintenance of the "Bendix Marine" mechanical telegraph system, illustrating double face, double engine transmitters; double face, single engine transmitters, etc.

Gas- or Oil-fired Rivet Heaters for low pressure or compressed air, stationary or portable, are discussed in a new circular by Mahr Manufacturing Co., Minneapolis, Minnesota.

Arc-welding Accessories, a striking new 36-page bulletin printed by General Electric Company's Welding Division, is a comprehensive study of G-E arc-welding accessories such as chrome-leather, asbestos and flame-proofed-duck protective clothing for men and women operators, designed for safety and comfort.

Modern Line of Marine Signals, a catalog by Schwarze Electric Company of Michigan, consists of items made to specification for the U. S. Navy and Merchant Marine on varying types of horns, trumpets, bells, buzzers, etc. They are designed to overcome the noisy signal conditions in warehousing, docking and shipping.

Electronics at Work, in war, in medicine and in the home are described in Westinghouse's new 44-page booklet, B-3264. Various types of electronic tubes, key units of every electronic device, are shown, including some applications of practical industrial use.

American Hoist & Derrick Co., St. Paul, Minnesota, recently published two essential catalogs: "American Marine Deck Machinery" contains information on electric and steam cargo winches, warp winches, anchor windlasses and steam steering engines. "American Revolver" advertises the one-man "task force," the wide-gage machine with large diameter rail circle which can handle a long boom to cover a large area and still have great lifting capacity.

"The ABC of Electronics at Work" is a Westinghouse booklet on fundamental principles of the six basic ways in which electronic tubes function for industrial and military applications. Schematic drawings of the tube construction, and diagrams showing the typical circuits for the various functions, are used to explain how the tubes rectify, amplify, generate, control and transform light into current and current into light.

Carbite Softeners is a new publication issued by Cochrane Corporation descriptive of Carbonaceous Zeolite Softeners, their many uses and applications, particularly to the treatment of boiler feedwater supplies. It contains valuable information to the chemical reactions and general arrangement of the equipment, the results to be achieved, and other facts of value to engineers faced with water softener problems.

Babcock & Wilcox Co., New York, has just published a 40-page booklet on Marine Boilers. It contains engineering data of interest to naval architects, chief engineers, marine superintendents, and port engineers, on the single-pass boiler, three-pass (Liberty ship) boiler, three-drum boiler and others. Included are sections on the physical properties of fuel oils and specimen analyses of typical coals produced and supplied to seaboard and lake areas, and authoritative tables on the properties of steam.

Darling Valve Catalog: This new 324-page industrial valve catalog contains over 600 photographs, sectional views, designs, detailed drawings and other illustrations, with technical contributions by the finest valve engineering talent available. This is a valuable handbook for use in plant design, construction and maintenance.

Metallizing Process: The Metallizing Company of America, Chicago, Ill., pioneer manufacturers of metal spray equipment, have just published a new 40-page catalog which deals with all phases of the Metallizing process. This new book is actually an encyclopedia on metallizing applications.

Multival System: The Farval Corporation, Cleveland, Ohio, has published a bulletin describing an improved method of providing positive lubrication to a group of bearings from a central distributing block.

Hipersil Cores, by Westinghouse, is a new 12-page booklet listing special qualities of cores. Advantages are smaller size, lighter weight, wider range of linear response, and applicability to a variety of applications in the communications field. Lists and charts of recommended applications, performance curves which compare them with ordinary silicon steels, and diagrams of the type "C" core assembly, are given.

YOURS FOR THE ASKING!

The manufacturers named in this HOT OFF THE PRESS department will gladly furnish, without obligation to you, copies of the trade literature reviewed in these pages. For quick service, please use this coupon.

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BUSINESS

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Marine Furniture

There are two major questions which any purchaser of marine furniture must ask himself when choosing a supplier:

1. Can I get exactly what I want?

2. Can I get it when I want it?

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Kaszab marine furniture, constructed to your specifications, combines the skill and painstaking care of the cabinet maker with "know how" gained by building furniture and joiner work for scores of ships of all types: transports, freighters, tug boats, and combat vessels. Kaszab marine furniture is built in a modern plant, under rigid production control that guarantees deliveries on time.

Marine furniture built by Kaszab includes berths, desks, chart tables and cabinets, flag lockers, medicine chests. life preserver racks, mess tables and benches, log desks, settees, wardrobes, book racks, key cabinets, sink cabinets, and any other units that you may require.

Ask to have a Kaszab representative call, or sendus your arrangement plan and specifications.

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For complete information and quotations, write:

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Keep Posted!

NEW EQUIPMENT AND MACHINERY FOR YARD, SHIP AND DOCK

New Magnetic Clamp Speeds Ship Construction

The Sweetland Magnetic Clamp for positioning welded members is announced by Glenn-Roberts Company of Oakland, California, and Indianapolis, Indiana, makers of G-R welders, who will manufacture and distribute the new device. It is an electro-magnetic tool, designed for shipyard use but applicable by adaptation to a wide variety of uses.



Type B magnetic clamp, manufactured and distributed by Glenn-Roberts Co. shown in ship fabrication holding two stiffeners to deck plate, enabling flanger to keep two welders busy. Note absence of saddles or other devices requiring temporary welds.

The use of electro-magnets for this purpose is not new, but advantages claimed make it a highly practical application of the principle. The usual difficulties attendant upon lifting and transporting heavy magnets have been eliminated by compact and relatively lightweight construction in comparison to holding power. The device is equipped with retractable ball-bearing wheels working on a ball-bearing swivel, making movement quick and easy.

Stiffeners are positioned and held in place while the tack welds are made directly, without the use of saddles, clips or other means requiring temporary welds. This cuts time by approximately two-thirds, does away with chipping, conserves materials otherwise needed for making saddles, yokes, etc., and avoids setting up stresses from temporary welds.

For fairing deck plates, one magnet is placed across the seam to bring plates to the same level. With warped plates, a single magnet used in conjunction with a Johnson bar quickly effects leveling.



Fig. 1

Elkhart's Cellar and Mystery Nozzles

Brooks Equipment Corporation of California are now distributors for the Bresnan Distributing Nozzle, otherwise known as the Cellar Nozzle (Fig. 1). This ball-bearing nozzle is highly polished, has a body that is larger in diameter than most other makes, and is equipped with nine machined openings three different sizes of diameters.

Included in Elkhart's line is the improved Mystery Nozzle (Fig. 2),



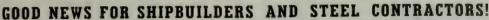
Fig. :

the all-in-one nozzle, combining the solid stream, the fog cone 75° spray and the water curtain, which leaves no water damage. The improved design eliminates moving parts and holes that clog, and is an all-purpose fire-fighting nozzle that responds at the mere twist of the wrist. The nozzles are made by Elkhart Brass Manufacturing Co., Elkhart, Indiana.

Curved Panels Made Without Costly Dies

An advanced technique in plastic molding makes possible fabrication of parts and panels in cylindrical shapes

(Page 125, please)



EXPERIENCED OPERATORS . MODERN MACHINES . ON TIME DELIVERIES

NOW AVAILABLE FOR ADDITIONAL PREFABRICATION — SINGLE UNITS OR QUANTITY PRODUCTION



ROLLS FOR 11/2 INCH

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Applications of wear-resisting HUNT-SPILLER AIR FUR-NACE GUN IRON Cylinder Liners, Heads, Pistons and Piston Rings will give maximum service between renewals and aid in the reduction of fuel and lubrication costs.

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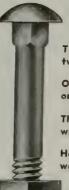
Air Furnace GUN IRON





UNOFFICIAL U.S. NAVY MOTTO

(In Admiral Halsey's Office—aboard Headquarters Flag Ship, sent him by Chief of Pacific Fleet Admiral Nimitz)



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One to think with, one to sit with.

The War depends on which we choose—

Heads we win, tails we lose.



It's similar buying BOLTS and NUTS;

Discrimination you should use.

THINK! and get the MILTON brand

With these products YOU CAN'T LOSE.



THE MILTON MANUFACTURING COMPANY

Milton, Pennsylvania

KEEP POSTED!

(Continued from page 122)



or simple and compound curves at low initial costs. The method used by the Theodore Moss Company, Brooklyn, N. Y., bears special application to the production of parts in small quantities where ordinarily in-

itial costs of tools, dies or steel molds would be excessive.

Typical product of the new method is the airplane panel illustrated. It is accurately machined to accommodate levers and knobs, and conform rigidly to multiple of curves specified by the designers. Panels of this type, here-tofore made of aluminum, required a steel die to form the curves. By the new technique, the thermoplastic panels are first molded flat and, while suspended in a semicured state, yield to curves of an inexpensively built forming device.

The plastic panels are considerably lighter than alminum. The new method solves cost factors in limited production for various instrument, equipment and industrial applications.

Power Pump

This power pump is a new design manufactured by the McGowan Pump Division of the Layman Manufacturing Corporation, Cincinnati, Ohio. This is a duplex side pot power pump designed for general use in the



oil, steel, synthetic rubber and related industries. Outstanding features include a 1000-lb. working pressure, all movable parts totally enclosed, herringbone gears, Timken roller bearings.

It has a flanged suction connection on either side and double shaft extension. Bearing housings are extremely large to provide easy maintenance. It is easy to assemble or disassemble. Interchangeable liners give optional capacities and pressures. For complete information relative to the adaptability of this pump to your specific requirements write for Bulletin No. 3, published by the manufacturer.

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Arc Stud Welding

The Nelson Specialty Welding Equipment Corporation of San Leandro, California, specialize in arc welding equipment for welding studs to metal surfaces. After considerable research, they have perfected a stud welder which, even in inexperienced hands, never misses once it is adjusted to the job in hand.

From the moment the trigger is pulled, the entire weld cycle is automatic. The welding current is turned on and the stud is lifted to create the arc, which burns a predetermined length of time. The lift of the stud is accomplished by a spring mechanism in the gun which is set into action when the trigger is pulled. The number of cycles the arc is allowed to burn is controlled by a pneumatic timing device which is built into the control unit.

When the arc is completed, the timing device trips the gun, thus forcing the end of the stud to be plunged into the molten metal. This completes the welding operation, after which the gun is removed from the stud and loaded for the next weld. The timer is adjustable and controls

the operation of the gun in fractions of a second. The dial is calibrated in cycles and, when once set for a certain sized stud weld, repeats the same timing cycle for each weld.

In shipbuilding there are hundreds of applications in which this stud welder will save much time and material as compared with the conventional methods. Perhaps the most obvious is in fastening deck planking to steel decks. Here the Nelson welder is the acme of simplicity and efficiency. The old method consisted of bolting the wood plank to the deck with through bolts, the nuts being countersunk in the wood deck and hidden by wooden plugs. This weakened the steel deck and allowed seepage leaks, and the hole was often a center of corrosion. Holes had to be drilled where they were free of obstruction from below, which did not allow the best placement of plank

In the Nelson method, a section of wood plank is fitted and wedged into place. Holes are drilled and counterbored to the desired depth, after which the plate is cleaned of all paint, rust and zinc, through the hole



The Nelson electric arc studwelder on adjustable stand especially adapted for welding deck studs.

in the planking. The stud is welded through the hole to the steel deck. A lampwick grommet and a cadmium plated washer are placed around the stud on the counterbore shoulder and a slotted nut is driven home solidly on the stud by means of a driver-bit worked by an air drill. A wooden plug is then driven into the counterbore and the job is complete with a welded joint stronger than the stud itself.

The steel deck remains intact and positively watertight. All studs can be placed to the best advantage. Deck planking is handled only once.

These studwelders can be used to secure in place any diameter of stud from $\frac{1}{8}$ " to $\frac{1}{2}$ ". It can be used also to secure many other types of fasteners, such as large-headed insulation pins, and lengths of welding wire for securing self-locking speed clips. Some shipyards are using these guns with great savings in time for spot welding studs to hold pipe hangers, cable clips, brackets, instrument panels, grating supports and cargo batten clips, thermostat lines and many other items. There are said to be 10,000 such studs on a Liberty ship and 55, 000 on a C-4.

The Nelson Specialty Welding Equipment Corporation have a finely equipped modern manufacturing plant at San Leandro, California, and are ready to supply industry with these very useful tools.



Non-slip Floor — Wet or Dry

A wet floor need not be a slippery floor. Alundum Floor Tile provides non-slip effectiveness that is not lessened by water — a surface that will not wear slippery even in places where traffic is concentrated. In fact, both the non-slip effectiveness and durability of Alundum Tiles are guaranteed.

This galley is a typical example of the use of Alundum Tile. It will pay you, too, to prevent costly slipping accidents.

There is also Alundum Ceramic Mosaic Tile for showers and lavatories and Alundum Aggregate for making terrazzo floors non-slip. Catalogs on request.

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...new power, speed and stamina... these are not mere words but realities already achieved at Harbor Boat Building Co.





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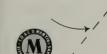
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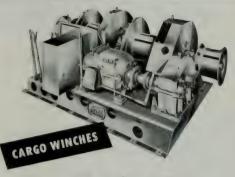
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Developed originally for communication between pilot-instructors and their students, and now widely used in Army and CAA training ships, the Ranger Model 404 Interphone, a product of Electronic Specialty Co., Los Angeles, has ben found useful on noisy factory assembly lines for a two way communication between workers. Portability of the entire device is assured through its small size and light weight, which permits those using them to carry them on a waistbelt with a strap over the shoulder. Between the two persons is a single cord, of any desired length, for oneway communication, or two such cords for two-way service. Only one Interphone amplifier case is required for two-way operations.

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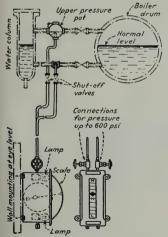
Pressure differential acts on Neoprene diaphragm, as shown in the illustration. The pin transmits net diaphragm force to spring-metal deflection plate, moving powerful permanent magnet along bronze alloy tubular well containing spiral armature of magnetic material. Rotation of the armature, and corresponding greatly-magnified motion of pointer, is in direct proportion to movement of the diaphragm, actuated by changes in static head.

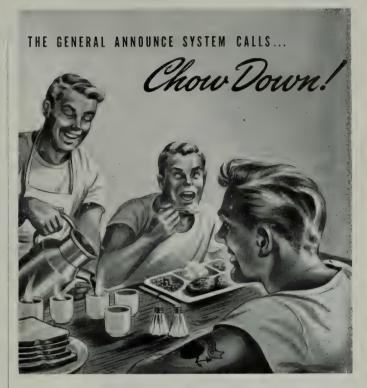
The magnetic principle permits complete separation of pressure parts from nonpressure parts without stuffing boxes. Thus the magnet and deflection plate are in the pressure chamber, whereas the jeweled-bearing armature in the tubular well operates freely without packing and at atmospheric pressure.

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Population Gain

Compilations by various Chambers of Commerce in the San Francisco Bay area indicate that there has been a tremendous jump in the population figures during the past two years, and that the growth is continuing at a slightly decelerated rate.

The estimates, based on various indices, such as ration book counts and postal surveys, range from 350,000 to 500,000. The lower figure would place this area well up among the first three industrial areas in speed of growth. The upper figure would set San Francisco Bay area at the top of the list.



All-Welded Marine Signaling Searchlight

A 12-inch signaling searchlight with an all-welded construction designed especially to withstand ship-board vibrations and sudden shock has been announced by the Lighting Division of the General Electric Company. This searchlight, which supersedes previous designs, is made of bonderized steel and has a durable marine gray finish over rust-resistant zinc chromate primer. It is intended for use on cargo vessels and transport ships.

The shutter, which can be operated from either side of the drum, has been tested to withstand more than two million operations at the rate of 180 operations per minute. As in earlier G-E models, the front glass is of the fixed type and is held rigidly in place. Access to the interior for relamping of the 1000-watt lamp is gained through a rear-opening door. The reflector is a standard silveredglass searchlight type, with a specially-treated backing of fired porpotection of the reflecting surfaces.

The supporting tunnion arms are heavy steel tubing, and are welded to other parts of the mounting assembly to form a one-piece construction eliminating the danger of loosened joints due to rough weather and other adverse conditions.

Vanable Intensity Shutter Type Pilot Light

The Gothard Manufacturing Company, Springfield, Illinois, is now manufacturing a new shutter type pilot light, which is particularly suit-

ed to aircraft, marine, signal and similar applications where various intensities of light are desired under constantly-changing conditions. These lights permit a gradation of light from bright through intermediate glows to total dark with 90° rotation of the shutters. Known as the Model 430 (with facted jewel) and Model 431 (with plain jewel), they are available with red, green, amber, blue or opal lens, and also with polarized lens.



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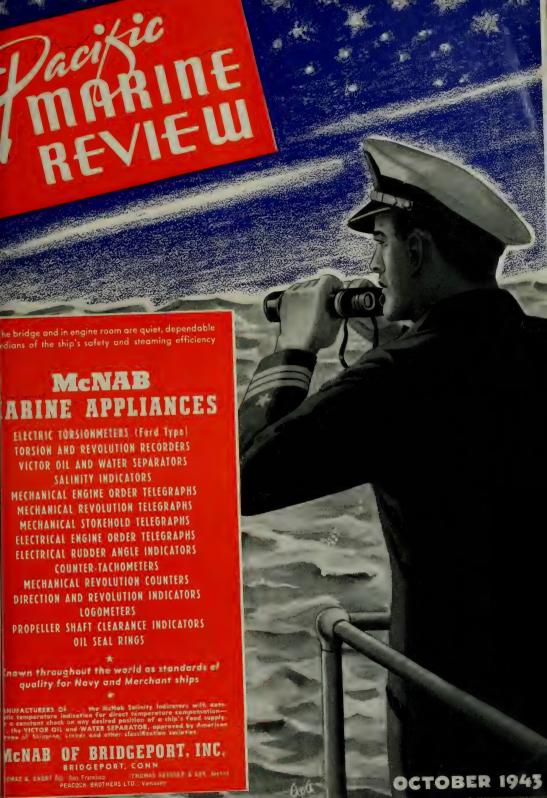
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Pacific IMARINE REVIEW

Post-War Sea Transport Plans

The Board of Directors of the Chamber of Commerce of the United States has received a report from the Chamber's Special Committee on International Transport, and this report has been submitted to the membership of the Chamber for consideration. That part of this report which deals with "International Transport by Sea" is summarized as follows:

- (1) We must establish, maintain and operate a fleet of merchant ships more nearly adequate to our defense in the event of a national emergency and adequate to carry a substantially larger percentage of imports than heretofore.
- (2) The United States Maritime Commission should consider the adequacy of established trade routes, strengthen and expand pre-war services and create such additional routes or services as may be necessary to meet the new situation.
- (3) American flag vessels should carry an amount of our foreign commerce at least equal to that carried under foreign flag.
- (4) As soon as the tonnage situation permits, without impeding the war effort, as many vessels as possible should be placed in private operation on essential trade routes.
- (5) Emergency shipping controls should be removed as soon and as completely as practicable.
- (6) There should be a strong, consistent national policy with respect to the American Merchant Marine, continuing the policies for shipping in

foreign trade embodied in the Merchant Marine Act of 1936 based on private ownership and operation with Government regulation and support.

- (7) For the disposal of the Government-owned fleet:
 - (a) New and fast ships should be used to replace uneconomic units in our merchant fleets.
 - (b) These ships should be sold to responsible American operators.
 - (c) Sale to American operators of the slower vessels for use in handling bulk commodities under conditions which would fully protect American liner services.
 - (d) A large sterilized inactive reserve to be created.
 - (e) After American requirements are provided, sell to private foreign owners any remaining surplus of Liberty or other slow ships at world market prices, with guarantees to safeguard American shipping.
 - (f) Sales contracts with American purchasers should include provisions to protect them in event of later sales of similar ships at more favorable prices or terms.
 - (g) All vessels wholly surplus and obsolete should be sold for scrap.
- (8) Consideration should be given to putting American flag ships in the indirect trades.
- (9) A continued shipbuilding program should be provided.
- (10) The Government training program for merchant marine officers

and unlicensed personnel should be continued as needed.

We like this program. It goes a little further than the American Shipping Institute program, especially in the matter of disposal of the Government-owned fleet, and it stresses private ownership and private development.

There is a very important factor which in our opinion is going to have a large influence in the post-war American Merchant Marine and which is not mentioned in any of the published plans. We refer to the large group of fast, efficient and economical cargo and passenger vessels now in the hands of the U.S. Navy and the U.S. Army. This fleet, combined with the proposed administration of occupied territories by Army and Navy officers, will be a strong competitor against participation by privately-owned American ships on any of the former Axis-controlled trade routes.

We pose the question: Should not these ships, especially fitted for war transport, be the "large sterilized inactive reserve"?

Nor can we agree that sales of "Libertys and other slow ships" to foreign owners should wait until "American requirements are provided for." We know that there will be far more Libertys than any possible American requirement. We know that Libertys are of no value to sterilize and hold for any 10 to 20 years in the future emergency. We know that immediately following the close of the war there will be tremendous demand for ships ready to go to sea. We know that long before "American requirements" for anything can be satisfied, this world demand will have been met in other ways, and ship prices will be way down. Why not sell the Libertys while the price is up and the selling easy, and thereby "insure" a continued "American" shipbuilding program?



The C-2 type freighter Great Republic on official trial trip.

(All photos by Moulin)

HE MOORE Dry

Dock Company is a pioneer among the shipbuilding plants of the Pacific Coast. This statement is true on two counts:

First, this yard is the oldest Pacific Coast owned shipyard in the major Pacific Coast shipbuilding league;

Second, this shippard was the first Pacific Coast yard actively to seek and qualify for contracts to build ships in the present U. S. Maritime Commission building program.

On obtaining their first contract, Moore's modernized their old yard, constructing the first (Pacific Coast) shipbuilding ways that were planned for the production of ships by the welded prefabrication and preassembly methods. A little later, as the building program expanded, Moore's built a new modern shipyard. So it is evident that they deserve the application of the title "modern yard."

This program of modernization involved a great deal of pioneer development work: in the application of the Union Melt automatic welding

machine to straight seam and fillet welding; on ship work; and in the lifting and handling of very bulky and heavy assemblies of hull parts by traveling cranes.

The successful completion by Moore's of four C-3 type standard cargo vessels proved that this pioneer work had been well done. After the trial trip of the first and second of these vessels there were no doubts left in the minds of competent observers as to the ability of West Coast shipyards to install modern high-pressure marine steam power plants.

So just a few months back, after several smaller contracts had been successfully completed, the Moore Dry Dock Company was awarded by the Maritime Commission a contract to build 65 standard cargo vessels of the C-2 type. This contract involved a tremendous increase in the working force and a huge program of training and production control to be imposed on inexperienced, hastily procured workers. The problems involved were tackled with characteristic energy and thoroughness by the entire organization, and it is thought that

some of the results as described herein will be of interest to readers of Pacific Marine Review.

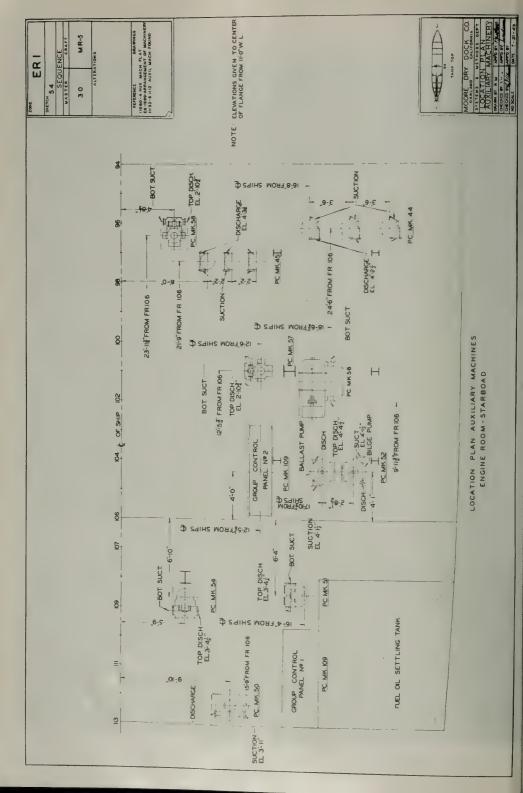
Hull Design

The first problem to be tacked is that of detail design of the hull, and the first question is, "Shall it be all riveted, all welded, or a combina-tion?" There are advantages and disadvantages in each choice. Moore's had had considerable experience in building this type of hull, and they decided that the combination of welding and riveting offered the most advantages and the least disadvantages. After considerable study it was decided that all the shell plating from bilges to sheer strake would be riveted to the frames, riveted along the seams and welded at the butts. All other joints in the hull are welded. This type of construction gives weld-

ON THE FACING PAGE: Upper view: Combustion control panel, port side aft, in upper engine room of the Blue Jacket.

Lower view: 450-lb. desuperheated steam piping and reducing manifolds in engine room casing forward bulkhead on the Blue Jacket.





ing strength combined with sufficient flexibility to minimize locked up welding heat stresses, and make possible the complete elimination of liners in the seams. One side of each plate in the strakes that have riveted seams is joggled for the lap in a special rolling machine designed and adapted in the plate shop.

In order to have down hand riveting and welding, the entire shell plating and framing of the hull is assembled on huge mock-up jigs. These are shown in our illustrations. The buttock lines and water lines are located on the jigs and also on the fabricated frames and plates. These lines are made to coincide as the frames and plates are laid out on the jigs. So accurate is the fabrication work that very few holes have to be reamed before riveting. All butt joints are staggered, and at suitable intervals they are left unwelded so that the vard cranes can lift sections of the side shell with frames attached off the jigs and carry them to the ways for erection in the hull structure. These sections may weigh up to 72 tons. Our illustration shows one such section spotted in place. Certain portions of some of the seams are left unriveted at the fore and after peak connections so as to allow for adjustment in erection on the ways, but at least two-thirds of the total hull riveting is completed on the jig.

These assembly jigs not only save much elapsed time as well as many man-hours of welders and riveters, but also assist greatly in fairing the

lines of the hull.

Time-Saving Machines

An interesting yard-designed and yard-built machine is the Castle flame

Right: Side shell assembly jigs and some prefabricated side shell sections. Below: Completed stern frame. Four cast steel sections thermit welded into a complete unit.

(Page 64, please)









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Steel Castings

NE OF the largest and most modern foundries in the United States, comprising 43 acres, built by the Defense Plant Division of Columbia Steel Company, a U. S. Steel subsidiary, near Pittsburg, California, has been completed and is now in operation.

This new project, which is located on property adjacent to Columbia Steel Company's Pittsburg Works, was constructed at a cost of more than \$6,000,000 at the expense and for the account of Defense Plant Corporation. The Government has contracted Columbia Steel Company to operate the new foundry for the duration of the war.

When running in full capacity, the foundry will provide approximately 30,000 tons of steel castings annually. However, a shortage of skilled man power and the delayed delivery of several installations will retard the foundry's getting into full production for several weeks.

To conserve steel, these concrete supports were constructed for the runway of the large crane that will service the scrap yard. Further conservation of steel resulted in erection of the two concrete stacks in the background.

PACIFIC MARINE REVIEW

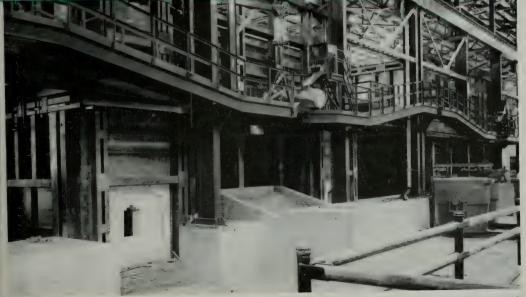
Products of the plant will be used primarily by the United States Navy and Maritime Commission. Facilities of the new plant include two 25 ton basic open hearth furnaces. A six-ton electric furnace is expected to be delivered for installation in a few weeks.

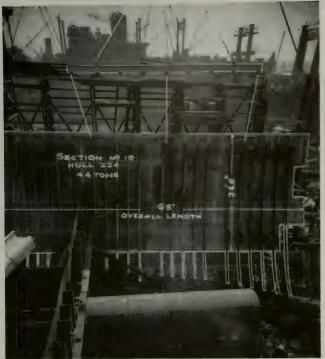
A "U" shaped structure, equipped with the latest of machinery, the foundry is so constructed to provide a smooth flow of products. A cleaning bay is located on each side of the "U." One cleaning room is used for smaller materials, while the other bay is used for finishing major castings. The finished products can be moved easily by cranes onto either railroad car or truck. Eighteen electric cranes service the foundry, including two 50-ton, two 40-ton and two 30-ton cranes.



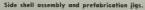


Above: A class-op view of one of the two 25-ten open hearth furnitus installed. Science Pit size of the two 25-ten open hearth furnitus.





Assembled section No. 10. Weight 44 tons, length 65 feet, height 34 feet 6 inches, being assembled in Hull 244, a C-2 type freighter.





MODERN SHIP
PRODUCTION CONTROL

(Continued from page 61)

plate-trimmer. This consists of a large plate table with tracks on each side over which a bridge travels, spanning the table. This bridge carries eight adjustable heads, each of which supports an oxy-acetylene cutting torch. Parallel trimming and splitting of plates is performed simultaneously. On this machine Moore operators made a record of cutting 5300 lineal feet of plate in an eighthour shift.

Another interesting device was developed to take care of a problem in cast steel stern tubes. Specifications call for a single length tube of such dimensions that it became a major foundry problem to cast it in one piece. So it is cast in two lengths, and in order to make a complete and perfect welding job these two pieces are set up in lathes and are machined for two journal surfaces on each piece, and the joining ends that are to be welded are machined to a bevel so that when these ends abut, they form a deep vee groove for welding.

A special frame was built carrying four pairs of trunnion rollers, fitted with a motor chain drive for very slow speed. An elevated platform over this frame carries a Union Melt welding machine. The two pieces of the stern tube are placed with their journal surfaces resting on the trunnions and their beveled ends in position for welding. They are attached to each other first by manual welding in the bottom of the vee joint. Then the motor is started and the automatic Union Melt machine with welding wire feed and flux bin feed properly adjusted finishes the weld perfectly in 12 revolutions of the tube.

Prefab and Preassembly

In addition to the shell prefabrication and preassembly already described, practically every part of the hull is produced by this process. Double bottom sections are preassembled by welding on the platens and moved by cranes to the ways. Bulkheads complete with all stiffeners, brackets and other fittings attached are routine welding jobs and crane lifts. Large sections of the superstructure or deck house are swung on special slings and hoisted and spotted on the hull by the giant Whirleys. Moore Dry Dock Company pioneered these methods on the Pacific Coast, prefabricating and preassembling huge 60-ton sections of the C-3 hulls before any of the newer shippards were built.

Hull Locations

With the hull on the ways, one of the great problems connected with training inexperienced workers is to teach them locations on shipboard. "Frame 64 lower 'tween decks starboard" is simple to an old-timer, but to a cowboy just turned "tacker" after four weeks' training you might just as well be talking in classical Greek. Even the instructor in welding would probably be at a loss to understand such directions. Therefore the ship is divided into small zones that can easily be spotted on diagrams of the decks on the ship, and each employee who needs one is supplied with a copy of a book composed of these diagrams showing locations of every zone. The designations are simple and clear, and no difficulty is experienced in sending men or materials to any part of any hull.

Machinery Installation

To adapt the mock-up system of pipe prefabrication to the somewhat complicated high steam pressure system of the C-2 type, standard reference lines are established in the engine room, more exactly located than actual ship frames. A complete full-size mock-up of the engine room was built and the necessary and most convenient reference lines were determined to be:

- (1) The ship's center line for all athwartships measurements;
- (2) The ideal line of frame No. 106 for measurements fore and aft;
- (3) The 11' 0" waterline for measurement of elevations.

In each hull these lines are carefully located by a surveyor to correspond exactly to the lines of the mock-up engine room. The lines are plainly marked on tank top, bulk-heads, frames and shell plating by center punch marks 6" apart.

The middle point of the engine room is carefully spotted, and two buttock lines 18 feet outboard port and starboard from the center line. Also 25 feet forward of the No. 106 frame line an athwartship line for frame No. 96 is spotted with center punch marks on the tank top.

By working to these reference lines, both in the mock-up engine room and in the ship's hull, all pipe work fabricated to fit the mock-ups fits exactly to the actual installations in the engine room.

A system of locating bars was designed to mount in brackets welded in place at the 11-foot waterline. The bracket clips that hold the bar allow for two-inch adjustments horizontally and vertically, and the bracket is set by the surveyor so that the marks on the bar corresponding to the center line of engine room auxiliary can be adjusted to correct alignment within the limit of adjustment. Piano wires attached to one bar run over a pulley in the opposite bar are held taut with a 26-lb. weight, and indicate the 11foot W. L. level and the fore and aft and athwartship center lines over each auxiliary.

Boiler Preassembly

Since the hectic days of 1917, when Moore's were building many large Scotch marine boilers for U. S. Shipping Board steamers building in their own and other yards, this plant has maintained a large boiler shop in which, in addition to much boiler work, a great deal of heavy forging and fabricating has also been accomplished. Part of this shop is now being used for the preassembly, pre-erection and pretesting of the steam generators for C-2's.

In each of these ships there are two boilers arranged in a single casing which is prolonged upward to form the uptakes of the stack and the down draft for preheated combustion air. This complete unit is set up in the shop and tested. It is then separated on the center line and taken to the ship in two units. This shop erection of boilers saves much time is comparison with the old method of erecting the boiler in the ship. The large capacity of the building slip cranes permits the installation of these completely assembled boilers in the hull on the ways before launching the vessel.

Very evident to the visitor at Moore's yard is the spirit of cooperation in a gigantic task. In addition to the building of new ships—the turning out of a C-2 every week or two—Moore's yard is doing a tremendous volume of ship repair, ship reconditioning and marine engineering work. The rate of production is increasing steadily.

This spirit of the yard is very well expressed in the closing stanza of a poem entitled "The Perfect Combination," written by an employee and published in a recent issue of the "Mooreship Mariner":

"My Kid is in the service,
That kid's my hope and prayer,
And when he had to join the show
A Moore ship got him there.
And I figure that the three of us,
Moore's, the Kid and me,
Are the perfect combination
To beat the enemy."



Typical brine piping layout through cargo holds athwartship next to bulk-head on all refrigeration vessels Hulls 214 to 219 inclusive. This view was taken on the Blue Jacket.



Consolidated Steel Makes Record in Construction of Escort Vessels

ROM DRAWING the first lines in the mold loft to the delivery of a Frigate, in the recordbreaking time of seven months, is the proud boast and achievement of Consolidated Steel Corporation's West Coast Shipbuilding Yard employees. Here is another story of American ingenuity, backed by a large organization, whose personnel

Admiral Vickery of the United States Maritime Commission called upon Consolidated Steel Corporation, Ltd., to assist in the building of 100 Canadian Corvettes, now known as

Above: First Frigate's stack and mast, taken coming in from trials. Note broom at masthead.

Below: The first Pacific-Coast-built





Inspectors, company officials and manufacturers' representatives on trial of first Frigate.

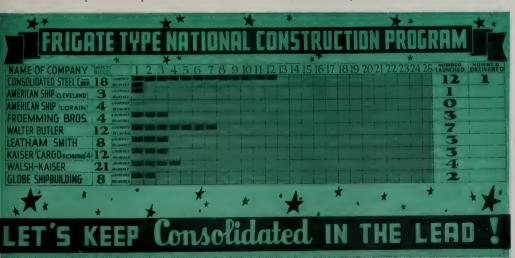
Frigates. At the same time, eight other yards were also asked to assist with this program.

Early this year a meeting was called by the United States Maritime Commission Regional Director and the various shipbuilding companies interested in this project, where plans were laid for the speediest completion possible. At this meeting, it was agreed to give the Great Lakes Region a 30-day advantage by permitting the first rollings of steel to be delivered to their yards.

The Consolidated Engineering De-

partment was to design a complete set of jigs for subassemblies. Six weeks from the day the order was given, the engineers had completed all the drawings and the jigs were completed and in the Wilmington

Progress Record Board set up inside Consolidated Steel Corporation's Wilmington yard as an incentive to production morale.





Yard ready for assembly. In the meantime, the crew in the mold loft had hit full stride, and as fast as drawings became available they had all the templates and loft work necessary for construction. Not only was this in itself a record, but the thoroughness of design of the jigs was particularly shown in the methods of dissipating weld heat into the jig itself by ingenious rib construction opposite each frame, as the accompanying illustrations will show.

It is interesting to note that the sections put into the jigs ranged in weight from 27 to 53 tons. Because of the lightness of construction going into a Frigate, it was believed advisable not to exceed these weights. Another interesting detail is the fact that 24 hours after a Frigate is launched, eight sections of the vessel following are tied together in position on the ways. This saves much time and speeds up production immensely.

Much emphasis was placed on detail and accuracy, as well as safety. For instance, all necessary stairs, platforms and safety railings were provided to make all operations easily accessible. Hinged outer frame sections were provided in the easy removal of sections, after assembly in the jigs. This was due to sections being narrower at upper deck elevations

It is interesting to note that upon completion of the first set of sections placed on the ways for the first Frigate, the accuracy of workmanship was proved in the fact that all sections lined up perfectly and no jigs had to be altered.

The keel of the first Frigate was laid on March 19, 1943, then on May 5, 1943, with the cheers of the entire yard echoing in her wake, she slid majestically from her way and into the water. Encouraged by this remarkable record, and due to the fact that this job was not performed by an excessive amount of men or overtime, five more vessels slid gracefully down the ways before any of the other shipyards on this program had launched their first one.

On August 31, 1943, Consolidated had the honor of delivering the first Frigate. She was delivered and accepted by Carl Flesher, West Coast Regional Director of the United States Maritime Commission. She was then turned over to the United States Navy for active duty.

Giving her "the works" in engine room on trial trip.

The original planning called for he use of four ways. However, in short time, due to the aid of ultranodern jig construction, one way was eliminated. On September 8, 1943, one more way was eliminated, and at present only two are being used. This was considered advisable because at that time 13 ships were available for outfitting, creating a smooth flow of

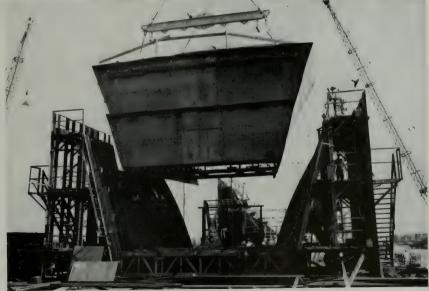
given sincere attention, notwithstanding the fact that Consolidated was out to deliver the first ship. This company has always believed that the overall program is of paramount importance, and insists that no confu-

once again that American ingenuity and enthusiasm cannot be beaten. Consolidated Steel Corporation not only did a remarkable job, and did it well, but invited other shipyards building Frigates to call and familiarize themselves with all the construction details. The yard permitted pictures to be taken of the many complicated assemblies. Also, construction sketches and photoblueprints were made available to all other interested yards.

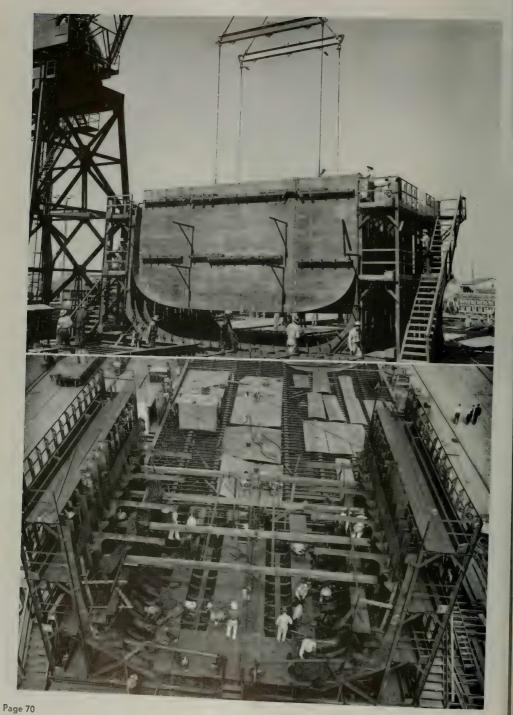
(not only at Consolidated, but throughout America) is doing much



UPPER RIGHT: A forward section from Frame 211/2 to 141/2 being lifted out of jig. It weighs 29.1



PIGHT. Section No. 5 forward being lifted. 34.7 tons.





Above: The unit from Frame $86\frac{1}{2}$ to $101\frac{1}{2}$, looking aft. This section weighs 16.8 tons.

Right: One of the heavier units is this "Y" section near the stern. As lifted, it totals 40.1 tons.

ON THE FACING PAGE:

Top: This midship unit from Frame $63\frac{1}{2}$ to Frame $72\frac{1}{2}$ is here shown from aft looking forward. It weighs 14.4 tons.

Bottom: This ''A'' unit reaches from Frame $72\frac{1}{2}$ to $86\frac{1}{2}$ and weighs 32.9 tons.





RICHMOND Delivers

Admiral Leigh Noyes, head of the Navy trial board that passed on the performance of the ship on its recent trial run, pictured as he discussed results of the trials with members of his board. Admiral Noyes was enthusiastic in his praise of the ship's outstanding performance.

On August 27, Maritime Commission Hull No. 653, Richmond Ship yard No. 3, Hull No. 1, or U. S Navy Hull No. A-P-130, named at her christening General George O Squier, was put through her official trials on San Francisco Bay and accepted by the Maritime Commission and the U. S. Navy as a troop transport type C-4 S.A.I.

She was the first ship built in the construction basins of Richond No. 3, the first ship of her type built on the Pacific Coast, and, so far as we know, the largest ship constructed on a basin type of building ways. Time consumed in her construction and in changes and delays due to U. S. Navy designing was 471 days from keel laying to trials.

The trials were observed by large



Lieutenant-Commander R. A. Casson and Capt. J. W. Woodruff discuss with approval the gratifying results shown in the exhaustive tests of the ship and all operating gear.

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NO. 3 First Transport

LARGE STEAMER PASSES SATISFACTORY TRIALS

roups of officials, inspectors and echnicians from the U. S. Navy; the J. S. Maritime Commission; the office of Marine Inspection, U. S. Coast Guard; the various shipyards; he George G. Sharp Company, naval rchitects; the subcontractors; the vendors of machinery and equipment; and the press.

The complete trial consumed 10 to 1 hours. Breakfast, lunch and dinuer were served aboard to all hands. The tests included: a short shake down run at half speed; emergency steering; anchor windlass tests; an endurance run of three hours at full normal power; a maximum power run of one hour with steering and turning circle tests; emergency full ahead maximum to full astern maximum; emergency astern run at 40 per cent normal power for a half hour with eastern steering gear tests; emergency full astern to full ahead; and emergency half speed ahead steering gear test.

The Maritime Commission C-4

type is somewhat larger and faster than a C-3, and is designed with hold and 'tween deck spaces arranged for United States intercoastal cargo services. The propulsion power is a cross compound double-reduction geared turbine, which takes steam at 440 psi and 740° F. from two water-tube boilers and delivers 9000 horsepower to the shaft at normal full load.

The boilers are operated with automatic control, covering all factors in combustion, and are fitted for combustion air preheating and equipped with adequate superheat sections. The low-pressure turbine casing is mounted over and exhausts directly into the main condenser, from which the condensate is returned to the boiler through the usual Maritime Commission closed-feed system of three feed-water heaters, the third stage being of the deaerating type with sufficient capacity in the tank to act as a closed hot well for the suction of the main feed pump; and sufficient height above that pump to maintain a very positive head on the suction at any condition of hull roll.

The engine room auxiliaries include complete provision for pumps to operate the various piping systems that serve: the ship's hull; the galley; the sanitary systems for crew and for troops; the fuel oil transfer and serv-

Here Clay P. Bedford, manager of the Kaiser Richmond yards (third from left), holds an informal discussion of the morning's trial results with other company officials and members of the Navy trial board while at lunch aboard the ship during her trial trip.





Jackson and Harry Ritterson. Standin are Greg Vaitses and Ed Swain

ice; the lubricating oil transfer and service; the fire-fighting mains; and the ballast piping.

The majority of these pumps are electric drive, and an electric power station with three turbo-generators, motor generators and adequate switchboard equipment for complete control of power and lighting circuits

is installed on the dynamo flat in the engine room.

A large-capacity refrigerating machinery plant provides ample cold storage to preserve in good condition all the food necessary to cater to the appetites of a large group of soldiers on a long sea voyage. Refrigerated rooms are arranged to take care of maintained temperatures on a range from 10° F. to 50° F.

In short, this type of vessel is a self-propelled modern town equipped with all the modern mechanical aids to pleasant, healthful living.

Noted on the equipment and machinery installations of the General George O. Squier were the following

Allis-Chalmers Manufacturing Company-Main and Auxiliary Condensers.

American Forge Co. - Propeller Shafting.

American Hoist & Derrick Company-Cargo Winches. Babcock & Wilcox-Boilers.

Bailey Meter Company-Combustion Control.

Bendix Aviation Corporation-Engine Room Telegraph.

Bull & Roberts-Feed Water Test-

ing Equipment.

C-O-Two Fire Equipment Company-Smoke-Detecting & Fire Extinguishing System.



The two men who designed and planned the ship are shown as they discussed the post-war possibilities of converting such ships to freighters. At the left is AE Saunders, representing George G. Sharp Co., marine architects. Captain N. J. Kane of the American-Hawaiian Steamship Co. is at the right.

Chicago Pump Company - Saniary Pumps.

Clarage Fan Company - Forced

Draft Blower.

Crocker-Wheeler Electric Mfg. Co. Lighting Motor-Generator Sets.

Cutler - Hammer, Inc. - Control anels.

Dohrmann Hotel Supply Company

-Galley Equipment.

Electric Tachometer Corp.—Shaft Revolution Indicator System.

Empire Switchboard Company -

Emergency Switchboard. Falk Corporation - Main Reduc-

ion Gear. Foster Engineering-Pressure Reg-

lating Valves.

General Electric Company - Misellaneous Light & Power Equip-

nent. Graybar Electric Company-Main

witchboard. Hammel · Dahl Company — Tank

evel Indicator System.

Hopeman Bros.-Joiner Work. Ingersoll-Rand Co. - Feed Water

Johnson Service Co.—Boiler Treat-

ment. Kelvin & Wilfrid O. White Co .-

Navigating Equipment.

Leslie Company-Whistle. Lidgerwood Manufacturing Co.-

Steering Engine.

The A. Lietz Company-Magnetic Compass and Binnacles.

Veteran bay and river pilot Capt. Ernest Mohr capably guided the ship during her all-day trials. He is shown here on the compass platform at the speaking tube to the wheelhouse.

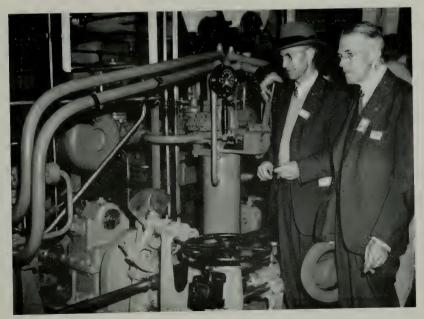


Lorimer Diesel Engine Company-Emergency Diesel Generator.

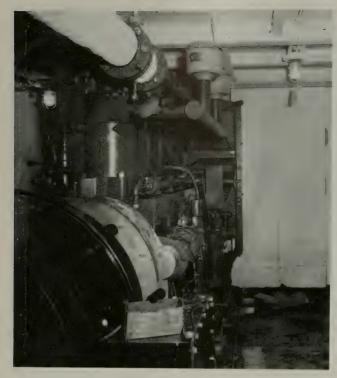
Mackay Radio & Telegraph Company-Radio Equipment.

McNab of Bridgeport, Inc.-Oil and Water Separators.

Markey Machinery Company -Anchor, Windlass and Capstans.



J. S. Foster, vice presi-dent of the Lidgerwood Manufacturing Co., and Charles F. Binder, installation and trial engineer, have reason to look pleased as they observe the fine performance of their Lidgerwood steering engines aboard the ship.



Lorimer emergency generating set.

North Electric Company—Auto matic Telephone System.

Phelps Dodge Corp.—Copper Ca ole.

Pomona Pump Company — Port able Water Pump. Reliance Steel Products Co —

Reliance Steel Products Co. —
Metal Shelving.

Remler Co. Ltd. Public Address

Remler Co, Ltd.—Public Address System.

Sedgwick Machine Works, Inc.—Ammunition Hoists and Freight Elevator.

Shell Oil Company—Lubricating Oil.

Sperry Gyroscope Company—Gyro-Compass and Automatic Pilot.

Stearnes Company — Galley and Pantry Equipment. Star Electric Motor Company—

Motor Generator Sets.

Submarine Signal Company — Sounding System.

U. S. Hoffman Machinery Corp.— Laundry Equipment.

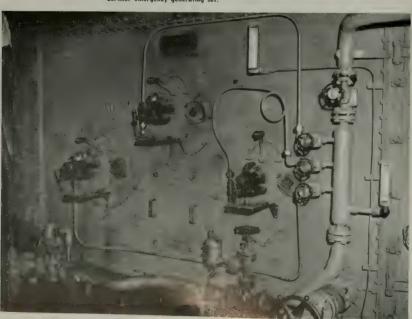
Westinghouse Electric & Mfg. Co.
—Main Turbines.

Welin Davit & Boat Corporation

—Boat Davits and Lifeboats.

Worthington Pump Corporation— Turbo-Generators.

York Ice Machinery Corp.—Refrigeration Equipment.



The ship is equipped with Babcock & Wilcox boilers and oil burners.





Above, left: Testing of anchor chain and winches was one of the first items of business on the trial run. Electrician A. M. Lips of Richmond Yard No. 3 is seen in the foreground as he used a dial indicator to check the rpm's of the anchor-hoisting gear. The winches are from Markey Machinery Co., Seattle, Wn.

Above, right: For safe emergency disembarking of crew and troops aboard, the Welin-MacLaughlin gravity davits are designed to get the lifeboats into the water quickly.

Right: This mechanical cow takes in powdered skim milk and fresh butter, and gives out pasteurized whole fresh milk.





Training

As the war progresses, certain trends give us indications as to conditions which are bound to seriously affect our future supply of welder ma terial in the shipbuilding industry It is well to be conscious of these trends, and to prepare in advance to combat the ever-mounting obstacle: set before us; for these indication: foretell problems which we have only experienced in a comparatively minor degree so far. That these problems will be very interesting as well as difficult, there is no doubt, as they deal with human beings and are therefore, largely problems of human psychology or, as the newly-coined phrase has it, human engineering.

Heretofore the supply of would-be welders has been mostly drawn from walks of life connected with such fields as general construction, factory and mechanics, and to a considerable extent from the farming communities. These men had a background of sufficient mechanical experience to adapt themselves fairly easily to welding, and to the general tempo of shipyard work. Also most of them were young and of sound mental make-up. Unfortunately, this is just the type of material that the armed forces are in need of, the result being that this class of men has been absorbed into the services both before and after entering the yards. The supply of such men is practically exhausted, and we must now draw from amongst white collar groups, women, and army rejects, some of the latter being either crippled or of subnormal intelligence. The draft boards are also inducting men from amongst the supervisors in the yards, so we have to face the problem of getting more and better supervisors. I say better because it stands to reason that the more complicated becomes the problem

The arc welder at work.

(Photo courtesy
The Lincoln Electric Company)

Shipyard Welders

SOME PRACTICAL SUGGESTIONS FOR SUPERVISORS OF WELDING TRAINEES

by A. von Drachenfels

of handling labor the more competent must be the supervisors who handle it. Since we must do the best with what we have, we must study new angles of approach in training and organizing, and more than ever the supervisor must have understanding and tolerance, and yet exercise the necessary authority to get the work done.

In handling new and inexperienced labor, three factors stand out above many others, namely, instruction, placement and quick promotion of those best suited for supervision.

Instruction

Among the problems of instruction we often find a lack of coordination between the school and job, the scarcity of capable instructors, and the absence of the kind of instruction that tends to build up enthusiasm and understanding of the trade.

In general it is probably safe to say that trainees learn considerably faster in the vard than they do in the schools, providing they have had a minimum number of 10 to 20 hours in the school. This is easily understood, as the atmosphere of action and competition in the yard, and the general tempo of the work, inspire the student to greater efforts. The leadermen or instructors on the job are much more attentive and desirous of developing their men in order to build up a crew to satisfy the demands made on them for production results. Also the trainee's work takes on a meaning and significance in the vard, whereas in the schools it is irrelevant, and, if the instructor does not pay much attention to his students, they soon lose interest and just tag along indifferently. In the schools too the trainees learn to weld under ideal conditions, and those coming into the yards as journeymen from the schools have to learn to weld all over again under actual shipyard conditions. This applies especially to women, who are less adaptable in this field.

On-Job Training

It follows, therefore, that training on the job should be emphasized. The schools should be mainly instrumental in making the students familiar with the elementary principles and applications of welding. Another function which the schools should stress, especially with the type of students now available, is to arouse interest in the trade by illustrating the importance of welding in the war effort in general, and in shipbuilding in particular, and by impressing the realization of the responsibility placed on the individual in the welding trade.

Having received a rough idea of their future functions, the students should be sent into the yard and placed according to their capabilities and natural make-up in that part of the yard for which they are best suited. They should then begin as tackers, and it follows that the tackerleaderman should also be the instructor, since he handles the rawest material. If the assignment of tackers is so arranged as to relieve the tackerleaderman of the distribution of his crew among the fitters, he has more than ample time to make his rounds of instruction. The tackers, on the other hand, have a lot of spare time between tacking to practice with scrap material. This arrangement also has the advantage of utilizing



An automatic Union Melt welding machine "sewing" a deck together.



A woman welding instructor at Todd Shipyards, New York.

trainee personnel during their earliest stages of learning, and of enlivening the often dull job of the tacker. As soon as a trainee becomes sufficiently proficient to go on limited production work, he should be transferred to a production crew. It then becomes the responsibility of the leaderman to train the trainee, and to encourage him to take a pride in the quantity as well as the quality of his work.

Supplementary Training

When the trainee reaches this stage, the school again enters into the picture. To imbue the new welders with interest in their profession, and to help them get a deeper understanding of their work and responsibilities, there must be provided instruction of a theoretical nature which the instructor or leaderman on the job cannot convey. That such a course is essential becomes more and more apparent as we begin to realize. through hard knocks of experience, the importance of sequence welding and the tremendous responsibility placed on the individual welder, in whose hands may rest the fate of the whole ship's structure.

Such a course need neither be lengthy nor complicated. It should rather be as simple as possible, including a rough study of the ship's construction, its weak points, and an explanation of the importance of sequence. There is no need to delve extensively in metallurgy or engineering theory; only the essentials needed to give the welder an insight into what happens as a result of his work. It should be made interesting by citing actual examples of failures and

their consequences on life and the war.

These supplementary classes should be given on company time. With the type of trainees we now have to deal with, this is the only way of getting them to attend. Attempts on the part of the unions, as well as management, to encourage or even to force trainees to attend supplementary courses, on their own time, have usually failed.

Another function of the school should be that of providing intensified training to backward trainees, or to those who happen to experience difficulties with some certain position or type of welding. In this the school should cooperate closely with the yard; and such trainees, when sent by their foreman on company time, should be painstakingly instructed in the particular type of work specified by the foreman.

The Instructor

Any discussion of welding schools brings out the question of instructors. The schools have been expanded and multiplied to such proportions that a serious shortage of capable instructors has developed. Unfortunately, persons of wide experience in a manual trade such as welding often lack the education and background to be successful instructors. On the other hand, however good a person may be at the teaching game, he must know the trade he is to teach. A combination of the two qualifications is rare. It seems, however, that too much stress has been put on trade background. Experience shows that

the demand for welders is so great that the vast majority of schools never get beyond the most elementary stages of instructions before their students are sent into the yard. This conforms to the in-yard training described above, and it follows, therefore, that the general run of instructors in school do not need to have years of varied welding experience to teach the bare elements of the trade. They should rather have the ability to interest the student and convey to him intelligently all the information possible in the short time available. Among the men who have taken up welding since the beginning of the war there is good material for instructors of this type, as many of them come from jobs requiring a comparatively high standard of education. It would be advisable to give prospective instructors examinations to determine their teaching abilities, as well as a welding test.

Our main problem is, however, with the leadermen on the job who carry the main responsibility of the training. Many of these men have done extremely well in spite of the fact that their functions as instructors have rarely been recognized or even noticed. Many of them have not been welding themselves over two years, and yet our great wartime merchant fleet has been built by and under the supervision of these men. They have had to arrange their work, supervise, discipline the men, and yet find time to instruct them. It is these men who need the greatest attention, and they are the ones who

should be carefully trained by the best available personnel in the yard. Leadermen should be given periodical courses, and they should qualify through examinations and tests for their positions, for they hold the key to efficient welding. Such courses would also tend to standardize welding practices, and new and improved methods and applications could be quickly applied.

Placement

Placement in relation to the welding trade usually means two things, namely, the placing of the right type of person into the trade, and the placing of the welder trainee in that part of the yard for which he is most suited.

The former presents some difficulties: the latter can easily be done with common sense and organization. The lack of suitable prospective welders is the stumbling block we encounter in trying to place the right type of person in the trade. Attempting to analvze the prerequisites of a weldergood health, intelligence, education, background of some mechanical experience, good or corrected eyesight, and reasonable age-seem the most important. No one of these is enough in itself, but a combination of some may suffice, always bearing in mind the type of work the trainee is being prepared for. For example, an elderly man with poor health or physical disability, but with intelligence and good eyesight, may well turn out to be an excellent welder for the pipe shop. On the other hand a youngster of little intelligence or education, but of good health, and possessing some mechanical experience, may be the right type for welding on the ways.

Adaptability

It is evident that with the lack of suitable labor supply we cannot be too particular in choosing suitable applicants. However, to push all and sundry into welding, disregarding the person's qualifications or desires simply because there is a shortage of welders, is nothing but a waste of time and money. Persons well suited for other trades are often seen wasting their efforts at being poor welders. To a great extent this is true of women. Girls of sheltered background, and obviously unsuited to the job, are influenced by pictures and advertisements showing clean, smiling, pretty models posing with welder's hoods on, only to find, after all the effort and time has been put in training them, that welding in the shipyard is more than they can stand. This is not an attempt to discredit the efforts of women in war industry, but rather an attempt to help them be of the value they can be by placing them in the type of work for which they are best suited.

If the placing of the right type of person in the trade is reasonably controlled, the placement of the person in the right environment in the yard should follow in logical sequence. In general it can be said that the strenuousness of the work progresses as one goes from the shops, through the slabs, to the ways. The placing of welder trainees should, therefore, be regulated accordingly, basing the location on their physical and mental ability. It is not reasonable to place women and men with physical defects on the ways, where their efficiency will be impaired by the circumstances of the work, and letting strong, able-bodied men work in shops and on slabs where the former could do just as well.

Promotion

In wartime, when every effort must strain towards greater and better production, and the supply of skilled labor steadily dimmishes, the main weight of responsibility rests on the broad shoulders of the supervisors. In welding, this is especially true, as welding is the final operation in the cycle of ship construction. It follows, therefore, that the best men suited for such responsibility should be upgraded as quickly as possible, regardless of seniority or "pull."

The hit-and-miss method of trying a man simply because someone recommends him has proved very costly in time, material and morale. We realize that the spectacular growth of our shipping industry occasioned such a demand for supervisors that there was no time to use any other method. But we have now more or less settled down, and some sort of recognized plan should be accepted. There is a wealth of literature on the subject of upgrading personnel, but it deals mostly with long-established institutions, where the turnover of

A girl welder at the East Pittsburgh Works of the Westinghouse Electric and Manufecturing Company selects a welding rad for the job at hand—a frame for a big electric motor. Her Martian-like outfit is the latest thing for the woman welder—safety glasses to guard her eyes; a flame-resistant canvas kepi to keep sparks off her hair and the back of her neck; leather gloves, sleeves, apron and spats that repel hot metal; and steel-toed safety shoes.

supervisors is slow, and much time can be given to observation of the prospective candidates.

Conclusion

We have seen from the foregoing observations that there is need for more thorough organization and study if we are to keep up and increase quality welding in the ship-yards. As we begin to relax from the birth-pangs of the unprecedented expansion of the shipbuilding industry, the ogre of labor shortage looms increasingly. As this shortage is more in the line of quality than quantity, research is needed to overcome the obstacles emerging from this situation.

Instruction of trainees must be more thorough, the placement of labor in the yards must depend on the limitations of individuals, and, above all, a way must be found to promote as quickly as possible those most suited for supervisory position.





Steady as you go!



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome St., San Francisco, California

NEW SPECIMEN EXAMINATIONS FOR LICENSED OFFICERS

The new sets of specimen examinations for prospective merchant marine deck officers have been completed by the United States Coast Guard to acquaint those who are interested with the type of examination questions they will encounter when attempting to qualify professionally for a license. The questions are not to be regarded as those actually given in regular examinations, since their purpose is only to serve as a guide for study.

The candidate should also be prepared to demonstrate in a practical way the use of a sextant and the adjustments thereof, plotting of courses, bearings and lines of position on charts, and the application of the International Rules of the Road through the use of models. An actual demonstration of the candidate's knowledge of signaling is also required, both with the blinker light at the rate of six words per minute and with semaphore flags at the rate of eight words per minute.

In order to obtain a Deck Department license, the following requirements must be met:

Applicants for licenses must be at least 21 years of age, with the exception of third mates, who must be at least 19 years of age. (Wartime emergency regulations permit persons of 20 years of age to obtain a license as second mate.)

All applicants for an original, renewal, or raise of grade of license must be citizens of the United States, native born or fully naturalized. This fact must be established by acceptable documentary evidence. Persons not able to prove American citizenship will not be examined for an original license.

Form NCG 866A (Application for Original License) may be obtained either by written request or personal application to the Merchant Marine Inspectors of the Coast Guard. It must be completed in all respects, and all statements of sea service made therein must be supported by documentary evidence, issued by responsible persons, officers or organizations. When the application has been completed, it must be presented personally by the applicant to a Merchant Marine Inspector.

Upon acceptance and approval of the application, the candidate will be sent to one of the offices of the U. S. Public Health Service for a physical examination. Extreme importance is attached to good eyesight, and the candidate must have uncorrected vision of at least 20/20 in one eye and at least 20/40 in the other. Candidates who wear glasses, however, must have without glasses a rated vision of at least 20/40 in one eye and 20/70 in the other. The candidate must also have perfect color vision.

Examinations for deck officers of ocean-going steam or motor vessels will be given in the local offices of

the Merchant Marine Inspection Service of the Coast Guard.

THIRD MATE—OCEAN STEAN AND MOTOR VESSELS Subject: NAVIGATION*

(1) Meridian Altitude-Sun.

March 23, 1942, on a vessel in D. R. latitude 1°35' S., and longitud 81°18' W., bound for Balboa, the meridian latitude of the sun's lowelimb was observed for latitude. Sex tant altitude was 87°07', bearing N. index error 1'00" off the arc and height of eye 42 feet.

Required: The latitude.

Time allowed-11/2 hours

(2) Position Line by Sun and Compass Error.

February 9, 1942, a vessel en route from Los Angeles to Balboa, in D. R latitude 10°40′ N., and longitude 89°02′ W., steering 110° p.s.c., observed the sun's lower limb for a position line and compass error Chronometer time of observation was 14h01m35°s, chronometer slow 1m11s Sextant altitude was 23°31′, no index error, and height of eye 38 feet. Sun bore 104° p. s. c.

Required: The longitude of the computed point, direction of the position line, and the vessel's true heading.

If worked by time sight, required: The longitude based on the D. R. latitude, position line, and the vessel's true heading.

Time allowed—2 hours.

(3) Azimuth—Sun.

May 31, 1942, on a vessel in D. R. latitude 32°19′ N., and longitude 77° 53′ W., steering 190° p. s. c., an azimuth of the sun was observed at about 9:40 a. m., ship's time. Chronometer time was 14°47°766°, chronometer time was 14°47°76°, chronometer time was 14°47°, chronometer time was 14°47°, chronomete

Required: The deviation of the standard compass and vessel's true course.

nometer fast 10m25s. The sun bore

96° p. s. c., variation 2° W.

Time allowed—11/2 hours.

⁶ Candidates may use any navigational methods they wish in the solution of problems, provided they are correct in principle. Because of the many different methods of computing a position line, in an ecessary, in order to obtain uniformity in examinations, to require as an answer either the longitude based on the D. R. latitude as worked prince Sight or the longitude of the computed point as obtained by any position line method either with plotting or traverse tables.

(4) Dead Reckoning.

A vessel took departure on Cape Blanco Light, Oreg. (42 50' N., and 124°34' W.), bearing 70° p. s. c., distant 7½ miles, variation 21° E., deviation 1° W., and sailed the following course:

P.s.c. 346°, distance 202, variation 23° E., deviation 3° W., wind N.E., L.W. 2°.

A current set 195° true, total drift for the run 23 miles.

Required: The ship's position by dead reckoning.

Time allowed—1½ hours.

(5) Middle Latitude Sailing.

What is the true course and distance by middle latitude sailing from Diamond Shoal Lightship in latitude 35°05.3′ N. and longitude 75° 19.7′ W. to Nantucket Shoals Lightship in latitude 40°37′ N. and longitude 69° 37′ W.?

Time allowed-11/2 hours.

(6) Bearings.

(a) A vessel on course 180° p.s.c., speed 11 knots, observed a light bearing 157½° p. s. c. at 2010. At 2058 the same light bore 135° p. s. c.

Required: Distance off light at 2058 and distance the vessel will pass off the light when abeam on the same

(b) A vessel on course 219° by gyro, speed 12 knots, observed a light bearing 258° by gyro at 0640. A rain squall obscured the light until 0722, at which time the light bore 357° by gyro. How far off did the vessel pass when abeam of the light?

Time allowed-1 hour.

Subject: INSTRUMENTS AND ACCESSORIES

- (1) How do you read an aneroid barometer?
- (2) What time is a chronometer kept to?
- (3) What is a pelorus, and what is it used for?
 - (4) What is the azimuth circle?
- (5) Name the navigational auxiliaries that operate off the gyro-compass.
- (6) Name the various parts of a sextant.
- (7) What is index error of a sextant? How is it determined and how applied?

- (8) Describe the sounding marchine.
 - (9) What is a taffrail log?
- (10) How is the hand lead marked? Is it to be considered an obsolete thing, thrown in a locker and forgotten?

Time allowed -2 hours.

Subject: CHART NAVIGATION

- (1) What is a nautical chart?
- (2) Describe the Mercator chart, explaining the principle upon which its construction is based.
- (3) Why is it preferable to use a rhumb line for steaming moderate distances?
- (4) If you wanted to measure the distance on a Mercator chart, between points a long distance apart, what would you use as a mileage scale?
- (5) What is variation? How is it caused? Where is it found.
- (6) What do the figures on the unshaded portion of a chart indicate?
- (7) How is the position of a buoy marked on the chart? Of a lightship? Of other lighted aids? Of a beacon?
- (8) If on the chart you saw a buoy marked N6, what kind and color of a buoy would you look for and on which side would you pass it when entering a harbor?
- (9) What are some of the Government publications which are issued for the aid of navigation?
- (10) If a light is 90 feet above sea level and your height of eye is 54 feet, what distance would it be visible?

Time allowed-2 hours.

Subject: INTERNATIONAL AND INLAND RULES OF THE ROAD

- (1) (a) When is a vessel to be considered under way by these rules?
- (b) At what moment are you "under way" from an anchorage? When your anchor is aweigh, or when it ceases to hold?
- (c) Does the fact of your having or not having way upon your ship have any bearing?
- (2) Approaching a port from seaward during a fog, how would you know when you pass the line of demarcation between waters where the International Rules apply and waters where the Inland Rules apply?
 - (3) Describe fully the navigating

- lights of an ocean-going motor vessel of 3000 gross tons.
- (4) Describe the lights for steam vessels when towing in inland waterways.
- (5) Describe the anchor lights for vessels (a) under 150 feet, (b) over 150 feet. What is the day signal for a vessel at anchor in a channel or fairway?
- (6) If in a steamship your engines break down at night, what change would you make in your lights?
- (7) What lights does a steam pilot vessel carry when engaged on her station in the waters of the United States and not at anchor?
- (8) If at sea, during the day a vessel is sighted, and upon close approach is seen to have displayed three shapes hoisted in a vertical line, the highest and lowest globular in shape and red in color, and the middle one diamond in shape and white, what would you judge the vessel to be doing?
- (9) Are steam vessels of less than 40 tons compelled to carry the same lights as other steam vessels? If not, what lights may they carry instead?
- (10) What lights are required on vessels and boats in international waters, except open boats, when line fishing with their lines out and attached to or hauling their lines, if not at anchor or stationary due to gear made fast to rock or other obstruction?
- (11) In what respects do the international and inland rules regarding fog signals differ?
- (12) What are the sound signals for steam vessels meeting or crossing so as to involve risk of collision? Are they to be given in fog?
- (13) State the steering and sailing rules which govern two sailing vessels approaching one another so as to involve risk of collision.
- (14) How would you recognize and maneuver to pass, night and day, in inland waters, a dredge at work in a channel?
- (15) Describe the inland day and night signals to be displayed by steamers, derrick boats, lighters, or other types of vessels made fast alongside a wreck, or moored over a wreck which is on the bottom or partly submerged, or which may be drifting.

(Continued in November issue)



by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief,"
Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

XI-MAIN GOVERNOR

The work required of the governor is reduced to a minimum by connecting it to the pilot-valve assembly which it drives. The flexible spring coupling (16), Fig. 10, reduces the friction caused by any misalignment between the pivot rod and the upper arm of the governor weight and the axis of the pilot valve. It also transmits rotary motion to the pilot valve, thereby eliminating any tendency for the latter to stick.

The friction which may be caused by the transmission of axial motion to the pilot-valve and maintaining a fixed relation between the upper weight arm and the pilot valve is minimized by the use of a hardened pivot rod (15), Fig. 10, the tips of which rest in a cup in the hardened end of the weight arm and in the bearing (14) in the pilot valve spring plug.

Friction between the two arms of the governor weights (10), Fig. 10, is minimized by using a roller on one arm. A flat surface on the other arm bears on this roller, which is free to turn. The rolling contact surfaces are hardened to prevent wear, and all parts are thoroughly lubricated by the oil discharged from the pilot valve.

The governor is adjusted for a normal operating speed of approximately 600 rpm.

The factory adjustment of the governor is permanent and should not be changed. Damaged governors should be sent to the factory for repair and to be retested.

Any adjustment with regard to

change in speed range or regulation should be made by adjustment of the spindle (6), Fig. 8.

Regulation

Regulation is a term used to express the change in speed that occur with a change in load, and is usually stated as a per cent change in speed that occurs when passing slowly from no load to full load based on the full load speed. The governor-lever ful crum is set properly at the factory and should not be changed unless absolutely necessary.

If it should be found necessary to readjust the governor-lever fulcrum the regulation may be changed as desired by shifting the position of the fulcrum pin (5), Fig. 8, in the holes in the governor lever (4). To increase the per cent regulation, use the holes farthest away from the trunion pin (12). To decrease the per cent regulation, use the holes adjacent to the trunnion. Note, however, that if the governing is too narrow it may cause instability and consequent hunting. Do not decrease the per cent

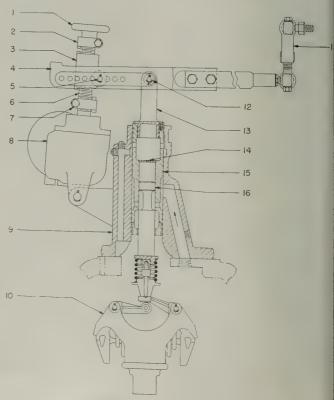


Fig. 8: Primary relay (525-kw set).

ulation to such an extent that iting results.

Hunting is a speed variation at connt load, and is the result of a timebetween a change of conditions I the correction. It is usually used by too narrow regulation, but y also result from excessive fricn or lost motion in the working ts, low oil pressure, and the use of of poor quality.

Synchronizing Speed Device

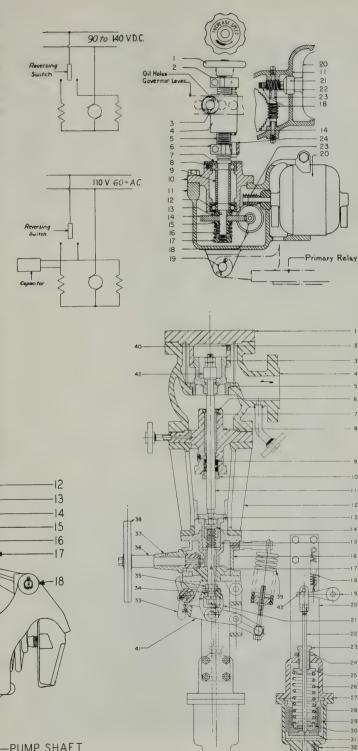
When remote control of operation

(Page 89, please)

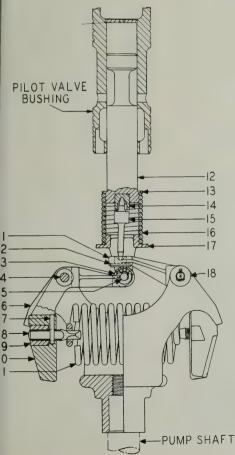
Fig. 9, right: Synchronizing device (525kw set).

Fig. 10, below: Governor and pilot valve (525-kw set).

Fig. 11, below, right: Throttle-trip valve (525-kw set).



SECTION AT AA



Pacific Shipping News

By Special Correspondents

Chinese Merchant Marine

Delivery of two 10,000-ton Liberty ships built at the Henry J. Kaiser Richmond, Calif., yards, to the Chinese Government, recalled to the Seattle waterfront the last Chinese ship to sail from Puget Sound. She was the Hai Da, which cleared from Seattle on October 24, 1937, for China, and is among the list of missing ships.

The Hai Da was laden with sulphur for the manufacture of gunpowder for the armies of Generalissimo Chiang Kai-shek, and is believed to have been sunk by a Japanese submarine.

Commanded by Capt. F. C. Norvick, a Norwegian, the Hai Da carried a crew of 27 men, all Chinese, led by K. F. Yang, 28-year-old Cantonese, who was the ill-fated vessel's first officer.

On January 15, 1938, a complete oar from the Hai Da was found by a lighthouse keeper at Carmanah Point, west coast of Vancouver Island. The oar had the freighter's name carved on it. A few days previously, a splintered piece of oar and a lifebelt from the Hai Da were found near Carmanah Point.

The Chinese owned freighter steamed down the bay on that October evening flying the British flag and with the Union Jack painted on each side of her pilothouse, never to be seen again.

Now the Chinese Government has received new freighters, the Chung Shan and Chung Chen (the informal names of Dr. Sun Yat-Sen, founder of the Chinese Republic, and Generalissimo Chiang Kai-shek, its present leader).

The vessels were chartered from the United States Maritime Commission by the National Government of the Republic of China through China Defense Supplies, Inc., and will be used to carry supplies and munitions for the war against Japan, the role intended for the ill-fated Hai Da.

Grain From Canada

Once a famous sailing vessel, the barge Island Forrester of the Island Tug & Barge Company of Vancouver, B. C., is completing the largest delivery of bulk wheat in the history of the Port of Seattle.

The barge will make three trips between Vancouver and Seattle, bringing in a total of 16,000 tons of the grain. The Island Forrester formerly was the sailing ship James Dollar. She is now taking the place of steam tonnage needed in the war effort. She discharges at Hanford St. elevator for Kerr, Gifford & Co. The wheat was purchased in Canada by the Commodity Credit Corporation, and will be used to feed Washington livestock.

George McIvor, chairman of the Canadian Wheat Board, says that between 10,000,000 and 15,000,000 bushels of Canadian wheat will be exported to the United States, if adequate means of transportation can be found. American railway cars, whenever available, are hauling feed wheat from Alberta to Utah, Wyoming, Idaho and Washington, in addition to the grain carried by the Island Forrester.

The barge was equipped for the transportation of "hog fuel" between Canadian ports and Port Angeles, Wash. The vessel has a belt encased in a tunnel. The belt runs the entire length of the ship below the main deck. To discharge the vessel, planks on top of the tunnel are removed and the belt is started. The wheat comes out the stern of the barge into a scow that has been boarded up. A marine conveyor used in Portland to discharge Columbia River barge wheat, was brought to Seattle and used in unloading the scow into a hopper on the dock. Through the bottom of the hopper, the wheat goes into another conveyor which takes it into the elevator.

Port of Seattle Expansion

The contract for the construction of two large transit sheds for the new shipping terminal building on the

WOMEN BUILD DESTROYERS

Men are being assisted in the construction of destroyers at the Seattle plant of the Seattle-Tacoma Shipbuilding Corporation by crews of women electricians. Coming of one of the new fighting ships. Growing School, Crylla Schourr, Joy Scheliz, Lorent Wilson, Genevieve Wesolowski, Marjorie McTight: Orvilla Schourr, Joy Scheliz, Lorent Marjorie Williams, with Joe Carroll, leadman, and Earl L. Cole, assistant superintend.



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e of the old Moran Shipyard in attle has been awarded to the estern Construction Company at c firm's bid of \$561,157, it was an unced by the Port of Seattle Comission. The time limit for the work 156 consecutive calendar days. The d was approved by the Federal forks Administration.

The J. W. Bailey Construction ompany submitted a bid of \$579, \$1, and Daniels & Turnquist a bid \$586,543. A total of 20 bids were abmitted. The sheds will be 980 set long and 110 feet wide each.

The terminal is being constructed n Elliott Bay between Dearborn and connecticut Streets and will be one f the most modern on the Pacific coast. There will be space for two trge ships on each side and a smaller essel at the face of the terminal. Work on the substructure is well under way.

Destroyer Launched

Capt. William J. Malone's goodye to the Seattle area was said on September 10 at the launching of he destroyer Ross, the 20th vessel sent down the ways of the Seattle-Tacoma Shipbuilding Corporation. The veteran naval officer has been given a new assignment. He was succeeded by Capt. H. K. Stubbs.

Mrs. Malone, who has attended many launchings, was the destroyer's sponsor. Miss Frances Ann Malone was on the sponsor's platform with her mother, while Bobby Malone, 12-year-old son of the Malones, rode down the ways on the Ross with a crew of shipyard workers.

Captain Malone came to Seattle three years ago from the 14th Naval District.

Port of Seattle Propeller Club

Three officers of the Propeller Club of the United States, Port of Seattle, were reelected at the annual meeting of the organization on September 30. They are Philip M. Crawford, president; James C. Gow, vice president; and Alex D. Stewart, secretary-treasurer. They had no opposition at the election, according to an announcement by the nominating committee, consisting of Harrison J. Hart, chairman; W. H. Hayden, William T. Hayes, Edward Cunning

ham and Lieut. Comdr. Winston J. Iones.

The following nominations for members of the board of governors, two to be elected, were made:

Mark R. Colby, William T. Hayes, F. A. McPherson and Joseph Weber.

The program on September 30 featured "Whistle Signals," by Comdr. Raymond F. Farwell, U.S. N.R. Part of the educational film produced in Hollywood under Commander Farwell's direction, and now used for training men in the Navy, was shown.

Alaska Salmon Concentration

Operations the past season under the Alaska salmon concentration plan have been very successful, it was announced at a meeting of representatives of the Alaska canned salmon industry held in Seattle on September 10. Dr. Ira N. Gabrielson of Washington, D. C., director of the United States Fish and Wildlife Service, presided at the meeting. Under the concentration plan, 82 Alaska canneries, large and small, operated during the past season under mutual agreement. In the merger were approximately 120 plants. There was no curtailment of gear. Approximately 100 representatives of salmonpacking firms and labor unions were present.

Flat Top Launched

H. M. S. Arbiter, an auxiliary aircraft carrier, was launched on September 9 from the Tacoma plant of the Seattle-Tacoma Shipbuilding Corporation. The sponsor was Mrs. H. W. Taylor, formerly of Newark, N. J., wife of Captain Taylor of the precommissioning detail at Astoria, Ore.

Four More for Bellingham

A. W. Talbot, owner of the Bellingham Marine Railway & Boatbuilding Company, announces that contracts for the construction of four additional wooden minesweepers have been awarded to his company by the Bureau of Ships of the Navy.

The Bellingham company has completed contracts for the construction of 16 minesweepers and is building salvage vessels, rescue tugs and patrol vessels.



FLOATING CANNERY HAS BIG SALMON PACK

A strange-looking vessel with four towering masts and a large black stack, the floating cannery La Merced of the Peninsula Packing Company arrived in Seattle on September 2 from Alaska with a pack of 61,000 cases of canned salmon, mostly reds. The salmon was caught by the La Merced's fishermen and packed aboard the vessel. The La Merced is diesel-powered and uses both her engines and sails when voyaging to and from the fishing banks of Alaska.

San Diego Fisheries

The phenomenon of the returning albacore remains to such an extent that over a hundred boats are fishing out of San Diego alone. Many of these are former fresh fish boats, and the entire fresh fish fleet has gone over to pursuit of the more lucrative albacore for canning at \$325 a ton. The result is that fresh fish are not to be had on the local markets, although housewives are clamoring for this point-free food. The few fresh fish dribbling into the market are those which happen to take the albacore fisherman's hook and are hauled aboard.

The combined July catch for San Diego and San Pedro was approximately 2400 tons of albacore, and, although the schools have now moved down to below San Martin Island, full loads are being caught in record time. With the shift in the location

of the schools, it is expected that most of the small jig boats will drop out and return to local fresh fishing, but the bait boats, especially those with refrigeration, will follow the schools and may continue with record catches for several more weeks.

Seiners to Clippers

The loss of so many tuna clippers to the Navy, and the inability to build new boats, has resulted in many of the big purse seiners being brought south and converted to live bait work. Their full after bodies make these boats suitable for conversion, as they can easily carry the large bait tanks on deck aft and also provide good working room around the stern for fishing racks. One of the latest purse seiners to be converted is the Victory, bought by M. O. Medina of San Diego from John Briskovich of Tacoma. She is now converted to a baby tuna clipper and is about ready for sea.

Navy Dry Dock Caissons

Other days on the Seattle water-front were recalled on September 11, when the Ames Shipbuilding & Drydock Company launched a huge steel caisson, which will be used as a flood-gate for a Navy drydock. Those at the launching included Edgar Ames, veteran shipbuilder and president of the Ames Shipbuilding & Drydock Company, which constructed 25 steel

ships for the United States Shipping Board during the first world war, and Mrs. R. E. Ellis, 85 years old, widow of the late R. Elwood Ellis, who was associated with Mr. Ames in the Ellis Channel Company, which constructed barges for the New York Central Railway Company.

The caisson was built by the Ames company near the site of its first world war shipyard. The work on the caisson was done under the supervision of Capt. R. C. Harding, U.S.N.

Personals

Howard E. Lovejoy of the pioneer Puget Sound maritime family has returned to the staff of the Puget Sound Freight Lines in Seattle as assistant operating manager of the shipping enterprise founded by his father, the late Capt. Frank Edward Lovejoy.

Harold A. Fager, former Seattle shipping man, who joined the Civil Engineers' Corps of the Navy last April and was commissioned a lieutenant, has been promoted lieutenant commander. For five years Commander Fager was superintendent of the Milwaukee Ocean Dock in Seattle, operated by Dodwell & Co.

Edward T. Jost of Portland, Ore., on August 27 took over the duties of port representative of the Recruitment and Manning Organization of the War Shipping Administration in Seattle, succeeding Capt. Roy C. Donnally, transferred to Washington, D. C.

Ames Shipbuilding & Drydock Company, Seattle, on September 11 launched a huge steel caisson to be used as the floodgate of a Navy drydock. Buffers at one end of the caisson rolled up a high wall of water. The caisson is a narrow structure 150 feet long, 22 feet wide and 53 feet high. It was kept upright by 500 tons of concrete ballass.





Capt. Harry 1. Anderson, who has succeeded James E. Murphy as vice president in charge of operations of the Puget Sound Navigation Company.

James E. Murphy, vice president in charge of operations of the Puget Sound Navigation Company, resigned effective on September 1, and has joined the Olson Boiler Works of Seattle. He has purchased an interest in the Olson Company. Capt. Harry I. Anderson, who was marine superintendent, has succeeded him. Captain Anderson was succeeded as marine superintendent by E. Wood Peabody, who has been with the Puget Sound Navigation Company since 1930. Joel Robbins has been promoted from port engineer to superintendent of maintenance and repair.

Cable Layers

The Seattle Construction & Drydocking Corporation has started work on two 154-foot cable-laying ships for the United States Army. The vessels will be triple-screw craft, powered with diesel engines. The company recently launched the wooden minesweeper YMS-341, the last of an even dozen vessels of this type. They included eight for the United States Navy and four for the British Navy.

The U. S. S. Willoughby, a steel torpedo-boat mothership, was launched on August 21 from the Lake Washington Shipyards. The vessel was christened by Mrs. D. R. Lee of Seattle, wife of Commander Lee, U. S. N., who is on sea duty.

YOUR PROBLEMS ANSWERED

(Continued from page 85)

s desired, a motor-operated speedhanging device as shown in Fig. 9 is sed in place of a fixed or manuallyontrolled speed-changing device.

This motor acts through double-eduction gearing to turn the spindle 5) and cause elevation and depression of the fulcrum trunnion block 4) to lower and raise speed respectively. In the limit of motion either vay, the trunnion block engages one f two adjustable stops (2) or (6) which are low-speed and high-speed limits, respectively.

When these limit stops are engaged, the motor is protected against indue load by a slipping clutch asembly at the bottom of the spindle [15], (16), (17), etc. These parts

un in turbine oil.

When the handwheel (1) is used to change speed, the clutch allows the pindle to turn without excessive restance.

Stops (2) and (6) may be adjusted

o suit requirements.

If using direct current at 125 or 50 volts, the motor is a series motor laving two field windings. Change in lirection is accomplished by using ither winding alternately. This contruction calls for a single pole double throw switch.

If using alternating current, a apacitor is used (see wiring diaram). This combination also requires only a single-pole double-hrow switch.

Hydraulic System

To insure successful response of he governing mechanism, the oilressure pipes and passages and the ressure end of the cylinder must be ull of oil and entirely free from air. To insure this condition, see that the roper oil level is maintained in the talk.

When putting new oil into the ank, avoid the introduction of frothy il into the pump section.

Operating Valves, Fig. 7

The operating valve mechanism onsists of an operating cylinder asembly and an assembly of five concolling valves (16). The valve stems to fifferent lengths and are discributed so that the horizontal beam 17) will allow all valves to rest upon heir seats, in closed position when he beam is lowered, and will open he valves in succession, as shown when the beam is raised.

The valves (16) are all operated by the movement of the piston (26). This movement is transmitted by means of piston-rod (24) and lever (32). The arrangement is such that when the piston is in its lower position all controlling valves are closed, and when the piston is in its upper position all valves are open.

The compression spring (23) tends to force the piston to its lower position and close the valves.

The oil relay system of the governor is piped to an opening in the operating cylinder (22), and functions to admit or discharge oil pressure to or from the cylinder and thereby operate the piston in opposition to spring (23) to adjust the opening of the controlling valves as may be required in governing the turbine for speed and load conditions.

Trip Throttle Valve, Fig. 11

This valve has two distinct and separate functions: first, to provide hand-control throttling of the steam admitted to the turbine when starting and bringing it up to speed; second, to act as a quick-closing valve when tripped by hand, or as an emergency valve when tripped automatically.

When the valve is shut, either latched or unlatched, there is full line pressure above the poppet (3) entering through the orifice plug (40) on the inlet side of the body casting.

When the valve is unlatched it cannot be opened until the latching arrangement has been set. To set the latching arrangement, when facing the vertical handwheel, rotate the handwheel (38) clockwise. This will, through bevel gears, rotate the screw spindle (14) screwing this up into the valve stem nut (15), which is connected to the main sliding spindle. This action raises the trip beam (41) to the latched position, where it is held in place by the trip latch (33). After the trip beam (41) has been engaged with the trip latch (33), rotate the handwheel in a counterclockwise direction. This will raise the valve stem nut (15) and the valve spindle lifting the pilot valve (42) from its seat.

When the pilot (42) is raised from its seat, a shoulder provided on the valve stem (11) engages with the collar on the underside of the poppet (3) and raises the poppet from the

main seat (5). When the pilot valve (42) is opened, but before the main valve is unseated, the high-pressure steam from the cylinder discharges through the pilot valve and the ports located in the poppet neck below the pilot seat to the outlet of the valve.

The pressure in the cylinder above the poppet and the pilot valve is thereby reduced to a fraction of the line pressure, as the pilot valve is graduated so that it will pass more steam than can be fed into the cylinder from the orifice plug (40).

In no case should the top of the poppet be permitted to contact with the underside of the top cover (1), as this would impose a heavy reactionary load on the trip hook and gear, and the trip rod would be unable to disengage.

The trip cylinder (32) is connected hydraulically in series with the oil release valve of the emergency tripping device and the operating cylin-

der of the steam operating valves direct to the main oil pump. (See Fig.

When the emergency governor operates due to overspeed, the oil release valve of the emergency tripping device will open, drain the oil from the cylinder (32) allowing spring (26) and bellows (29) to descend together with the trip rod (22), causing the pin (43) to strike trip the lever (19), thereby unlatching the trip latch (33) and allow the spring (39) to close the valve.

Operation

The turbine should always be stopped by tripping the valve shut.

The handwheel (38) should then be turned to the valve-closed position with moderate force to hold the valve to its seat and to allow the trip beam (41) and trip latch (33) to be engaged preparatory to opening the valve again.

When the valve is tripped, all moving parts connected to it are then unsupported, so that their weight, plus the force of the spring (39) and steam pressure will cause the valve to close. This action takes place whether the valve is fully open or only partly open.

To close the valve without tripping when used as throttle valve, or in case the valve is held open because of incrustations on its inside sliding surface, turn the handwheel (38) until the valve is seated.

Care should be taken not to jam the valve open; always turn the handwheel slightly back from the fullopen position.

Keep Posted!

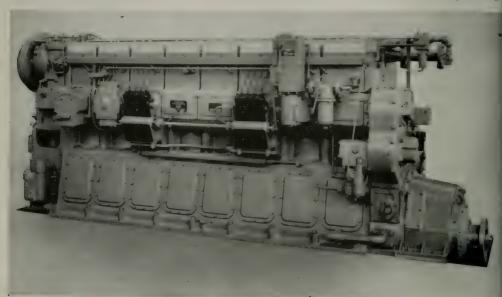
NEW EQUIPMENT AND MACHINERY FOR YARD, SHIP AND DOCK

Cast Crank Shafts for Marine Diesels

The technical progress being made in American industry under the stresses of wartime production is strikingly demonstrated at The Cooper-Bessemer Corporation, who recently released information on results obtained in their exhaustive tests for replacing engine crank shafts of forged steel with cast Meehanite crank shafts.

A comparison of the methods and materials used to produce heavy-duty engine crank shafts brought out the unusual savings possibilities that calbe effected in modern casting procedures over conventional methods. In a type LS Cooper-Bessemer 8 cylinder marine diesel engine, for estample, the steel ingot from which the crank shaft is block-forged weigh 36,000 pounds, but the complete shaft weighs only 12,000 pounds.

Two-thirds of the original weigh



The manufacturers of the new equipment announced in this department will be pleased to furnish complete details without obligation on your part. For quick service, please use this coupon. PACIFIC MARINE REVIEW 500 Sansome Street - - - San Francisco Send me descriptive data of the following new equipment as reviewed in your issue. [Identify by name of manufacturer and machine]

PC-449 vessels have main propulsion engines of diesel design, built by Cooper-Bessemer Corp. Mechanite castings are used in crank shafts, heads and cylinder liners.

of metal, or 24,000 pounds of critical steel, must be removed by various machining operations, such as sawing, chipping, drilling, turning and boring, using many man hours, delaying delivery schedules and keeping skilled workers from other important duties.

The increasing difficulties in obtaining crank shaft billet steel, and the already overburdened condition of available forging facilities, have forced engine builders to recognize the advancements made in foundry techniques and practices. The company's metallurgists and engineers were among the first in this group to intensify their exploration of the pos-

NAME

BUSINESS....

bilities of cast crank shafts for their arge line of diesel and gas engines.

In order to compare the charactersties of the two types of shafts, a atigue machine, of a size capable of andling a complete multi-throw rank shaft, was constructed.

The success of cast crank shafts as indicated from the outset, when he first shaft selected for testing a worthrow cast shaft with $4/\sqrt{2}$ -inciameter pins and journals, counterweights cast integral—was tested in 7-inch by 9-inch two-cycle gas entire.

Results indicated the feasibility of eplacing the steel forging with a Meehanite Metal casting without nodifying crank shaft dimensions for ngines of this particular design. Twelve cast shafts were produced and ssembled into engines going into the ield during 1936. All shafts performed satisfactorily and none have proken.

A series of similar tests on relaively larger cast crank shafts are till in process.

Just recently a 6-throw shaft casting 7 feet 8 inches long, with 5% nch pins and journals, was used to replace the forged steel shaft in an 8% inch by 11-inch diesel engine.

This engine was operated at 900 pounds peak pressure for 20,000,000 evolutions at 900 revolutions per ninute. When the bearings were renoved and whiting applied, no discress was apparent in the shaft.

During the next phase of the test, 20,000,000 additional revolutions were run at 900 revolutions per minute and 1000 pounds peak pressure. Bearings were again removed, whiting was applied, and the shaft was still in perfect condition.

The engine was then operated continuously in a peak critical test for six days. During the night of the sixth day, a change in operating efficiency indicated that the shaft had finally failed.

The engine was operated for 12 hours after all indications had pointed to a cracked shaft. An examination showed that this severe test had caused a fracture extending only half-way through the shaft, and it still continued to function, attesting to the strength and high endurance of Mechanite Metal.

These crank shafts were "as cast" process A Meehanite, stress-relieved but not heat-treated. In these tests, forged shafts of .45 carbon steel with a minimum tensile strength of 80,000 pounds per square inch were removed from assembled engines and replaced with cast Meehanite shafts. Pin and journal diameters, and crankweb thicknesses, were not changed.

As a result of the corporation's extensive and successful cast crank shaft development program, a number of the nation's leading machinery builders have turned to Cooper-Bessemer for production of at least part of their crank shaft requirements.

Freehand Electrical Marker

H. P. Preis Engraving Machine Company, Newark, New Jersey, announces the addition to its marking equipment line of a device for placing numbers, symbols and identifications on soft or hardened steel, alloy steels, other ferrous alloys, wrought iron and cast iron. Designed primarily for freehand marking, this equipment can be used also as an attachment to the company's Panto Electrical Marker for pantographic reproduction.

The equipment consists of a special transformer with ten voltage stages controlled by a convenient rotary switch, a hand-held marking pencil, a ground plate for use with small work, and a ground clamp for large work. The voltage selection makes it possible to obtain any desired depth

0

of marking, from the faintest line to the heaviest arc required for penetrating through scale or dirt on castings or heat-treated parts. A pilot light signals when the current is on. Use of this marker does not magnetize the work.

The marking point is made of a special long-life heat-resisting alloy, and is threaded into the holder at an angle so that it stands vertical to the work when the holder is placed in a normal writing position. The holder remains cool throughout continuous operation, due to a heavy cork insulation and a hollow construction which permits a constant flow of air through the entire length of its Bakelite sleeve.

Use of this device eliminates the necessity for stamping parts before heat-treating them, and overcomes the disadvantages involved in acid marking.

It is available for alternating current, 115 or 230 volts, 25, 50, or 60 cycles.

Thread-Tool Grinding Fixture

A new thread-tool grinding fixture for grinding 60° and 29° threading tool bits with extreme precision is announced by Robert H. Clark Company of Los Angeles, manufacturers of cutting tools.

This fixture has no graduated scales or moving parts. The machinist slides the bit into the holder, tightens a setscrew and places the fixture on the grinder work table, properly positioned for the thread angle desired as indicated on the fixture. This automatically holds the bit

This large crank shaft, cast of Meehanite Metal by the company and shown in its rough-cast stage, is 7 feet, 8-7/16 inches in length. It is obvious that finishing this shaft will involve negligible machining and waste metal compared with producing the same shaft by block forging.





securely and precisely at the desired angle to the grinding wheel.

The design makes it especially adaptable for use with a magnetic chuck, although, if desired, it can easily be clamped to the work table. The special tool bit holders will securely hold round or square tool bits of all sizes from ½" to ½" for cutting right and left-hand threads.

The fixture is available in two standard sizes, each of which takes all tool bits within a ½" to ½" range. One model is designed for the mechanic's tool kit; the second performs exactly the same work, but is a heavyduty shop model. A third model is being manufactured for grinding the special angles on blades used in the Clark 3-Blade Adjustable Hole Cutter.

Hermetically-Sealed Transformer

A new moisture and dustproof transformer that meets all Navy and other specifications for hermetic sealing is announced by Peerless Electrical Products Co., Los Angeles manufacturer of transformers for aircraft, marine and ordnance installations.



Of particular value where dampness or dust protection is an important factor, the transformers use glass or porcelain insulators with metal bands. These insulators are soldered into the transformer case, which is of cold-drawn copper-plated steel, and thus become an integral part of the case. As in all of the company's transformers, the "Vac-sealing" impregnation process is used, insuring absolute impregnation without solvents or other deleterious material present inside the coil. This is accomplished through the use of a special type of impregnant that cures completely under heat.

As the entire manufacturing operation is handled in the company's plant, the transformers may be quickly produced in any desired size or capacity to specification.

Plating Extends Tool Life

A method of adding a paper-thin layer of chromium to worn tools and dies so they can "work thousands of hours of overtime" in the production of Army ordnance equipment was described recently by Edward J. Stone, manufacturing engineer at the East Springfield, Mass., plant of the Westinghouse Electric and Manufacturing Company. This plating method, so successful that tools and gages have been reclaimed from the scrap pile and put back to useful work, has been a great salvation for overworked machines and machine tools.

Chrome-plated tools outlast un-

plated tools by as much as 20 to 1. Plating one tool at the Westinghouse plant, instead of the frequent grinding formerly required, saved 450 pounds of critical tool steel in a year. Another, used on all three shifts round the clock, once had to be ground four to five times daily, slowing production for each grinding. But when plated, this tool was used continuously for a week without regrinding or replating.

Some tools can be re-equipped for many hours of production by the addition of only one to three ten-thousandths of an inch of chrome, or one thirtieth the thickness of a human hair. The heaviest plate (used principally on gages) is five-thousandths to six-thousandths of an inch in thickness. Chrome-plating cannot be applied to every tool.

Plating is accomplished by immersing the worn tool or die, surrounded by a coil of wire, in a solution of chromic acid. A high electric current passing through the coil drives the chromium from the solution and onto the tool at the rate of one-thousandth of an inch per hour. Plating at a faster rate results in softer plate.

Before plating, tools and dies must be freed of all burrs, grooves or abrasive scratches by grinding, hand lapping and honing, and washed in baths of alkali, acid and boiling water to remove any impurities. After plating, tools are passed through a 350degree Fahrenheit oil bath to drive out any hydrogen absorbed during the plating process.

AUTO TRANSPORT TRAILER HAULS LIFEBOATS

This big Fruehauf trailer used to carry new automobiles to dealers. Today it transports lifeboats to Southern shipyards. This trailer carries four lifeboats, each 24 feet long and fully loaded, ready to go.





pray-Degreasing Booth

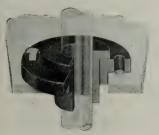
A new spray-degreasing booth just innounced by The DeVilbiss Company, Toledo, Ohio, is reported to combine those features which have proved themselves most desirable in nundreds of units built by this manufacturer for industry and the armed services during recent years.

In view of the war-born shortage of organic solvents of the type used in degreasing operations, one of the most important of the advantages claimed for this booth is the ability to hold solvent loss to barest minimum. Engineered for safe operation, even when hazardous materials of high volatility and very low flash-boint are used, the unit also removes tumes more thoroughly and delivers a more forceful, harder-driving solvent spray, according to reports.

It is made in 14, 16, and 18-gage steel. Sizes vary according to the requirements of the products to be haniled

Phenolic Guide for Valve Stems

Free and easy operation at all times s one of many advantages claimed



for a newly-invented Self-Alyn Guide for Valve Stem Extensions.

The improved guide consists of two shape molded phenolic laminated parts (1); a large outer part, called the guide, which is bolted to the bracket (2), a flanged bushing which floats around the stem extension and inside the guide, being held in place by the flange. The stem extension turns freely in the bushing and the bushing turns freely in the guide, so that free turning is doubly insured. Installation is simplified, since the bushing can be dropped into place after the guide is bolted to the bracket.

The laminated phenolic parts have great impact strength and are completely free from any tendency to crack or split. They are dimensionally stable, non-corrosive and unaffected by oil, moisture or atmospheric conditions. The glass-smooth, mold-hardened surfaces assure free turning, and sound-absorbing qualities eliminate metallic noises.

This fitting is made by the Gatke Corporation, Chicago 1, Illinois.

Special Radio Equipment For Lifeboats

Radio's vital wartime role of saving life at sea is sharply emphasized in the story of 84 men who recently returned to New York after their ship, the Stag Hound, of the United States Lines, was torpedoed and sunk off the coast of South America.

Adrift several hundred miles at sea in two lifeboats, which lost sight of each other, the Stag Hound crew maintained voice communication by radiotelephone, and contacted four potential rescue vessels in the two days that elapsed before they were picked up.

Both the Stag Hound's captain, Harold T. McCaw, and radio operator, Edward F. Wall, credited the lifeboat's special radio equipment—a combination radiotelegraph-telephone unit, powered by hand-cranked generator—with effecting their rescue.

This lifeboat radio equipment built in a single compact water-tight cabinet, capable of transmitting across several hundred miles at sea, has been installed by Radiomarine Corporation of America on scores of American vessels in recent months.



Gar-Bro "Shimble,"

Something New in Wire Rope Fittings

The Gar-Bro "Shimble" is so called because it is a combination shackle and thimble. This new wire rope fitting was developed basically for the purpose of overcoming the scarcity of standard shackles and thimbles. Since its development, however, it has proved itself to be much more efficient in its application to and protection of the rope. And as it is fabricated from small structural steel plates, it is also assisting in the war effort by utilizing non-critical material as well as overcoming the bottleneck in the standard shackle and thimble supply.

Forged from heated steel plate and shaped to the correct rope radius, the Shimble is rigid, so there can be no distortion under load with consequent rope damage, as sometimes occurs with elongated thimbles. Also it may be welded to other attachments, or the side plates may be bent to fit special conditions for safe and economical connections. Made with open and close ends, it is adaptable to a multitude of uses wherever shackles or sockets are used, such as guy anchorages, tractor hitches, crane slings, equalizers, boom topping, or turnbuckles. Shimbles are available in all rope sizes from 3/8" to 15/8". They are manufactured by Garlinghouse Brothers, Los Angeles, California.

On the Ways SHIPS IN THE MAKING



Launching of U. S. S. Coronado Down the ways at the Consolidated Steel Corporation's yard at Wilmington, California.

Revision of Barge and Tug Program

Considering the improved general shipping situation and the acceleration in the regular shipbuilding program, the Maritime Commission has announced revision of its wooden barge and tug program. The need has been reduced for certain types of auxiliary craft ordered when the call for ships was most insistent.

The original contracts called for 33 barges of 180-foot length, six of which have been delivered into service, and five are rapidly nearing completion. The remainder, the Com-mission announced, must be delivered on or before December 31.

Contracts awarded for the con-struction of 20 barges of 274-foot length requested by the Office of Defense Transportation for the New England coal trade have been cut in half in view of the improved shipping situation.

Also contracts for the construction of 22 ocean-going wooden tugs have been reduced, leaving 14 to be completed. Four of these will be assigned to handle coal barges for the New England trade, and the remainder turned over to the British.

Labor Leader Names **Chosen for Liberty Ships**

The Maritime Commission has an nounced that names of 13 former labor leaders will be assigned to Liberty ships scheduled for launching in the near future. Among the notables in the labor world are Joshua A. Leach, founder and first president of the Brotherhood of Locomotive Firemen and Enginemen; Robert Fechner. representative of the AFL; William B. Wilson, Secretary of Labor in President Wilson's cabinet; and Heywood Broun, the famous columnist and newspaper critic, who was the first head of the Newspaper Guild. Incidentally, Bethlehem-Fairfield Shipyard launched the S. S. Heywood Broun at their Labor Day program.

San Francisco, Calif.... Consolidated Steel Corporation, Ltd. Wilmington, Calif.
Walsh-Kaiser Company, Inc.
Providence, R. I.

Construction Awards

Contracts for the construction of 100 new-type small cargo vessels to be known as C1-M-AV1's have been awarded to seven shipbuilding com panies, the Maritime Commission recently announced.

Designed for transoceanic service. the new vessels will be approximately 4000 deadweight tons. Three hundred and twenty feet in length, they will be diesel propelled, and will be slightly faster than the Liberty ship

A complete list of the yards and the number of vessels they will build

	mber o
Yard \	essels
Walter Butler Shipbuilders, Inc.	
Superior, Wis	28
Leathern D. Smith Shipbuilding Co	
Sturgeon Bay, Wis	
Kaiser Cargo, Inc.	
Richmond, Calif.	12
Barnes-Duluth Shipbuilding Co.	
Duluth, Minn.	12
Froemming Brothers	
Milwaukee, Wis,	10
Globe Shipbuilding Co.	
Superior, Wis.	8
Pennsylvania Shipyards, Inc.	
Beaumont, Texas	14
,	
	100

Contracts have been awarded for the construction of 70 new vessels. including 6 C-type and 64 special type, the Maritime Commission has announced.

Under the terms of the contracts all the vessels, with the exception of 29 of the special type, are to be delivered into active service during

A list of the yards and the vessels they will build follows:

Number of Vessels	Type
б	C-type
32	Special type
32 70	Special type

August's Production Record

Western Pipe and Steel Co.

Yard

The Maritime Commission reports that during the month of August the nation's shipyards delivered 164 cargo vessels, totaling 1,697,400 deadweight tons, which included 110 Liberty ships, 15 C-types, 15 Maritime

Commission tankers, 1 private tanker, 4 Maritime Commission coastal tankers, 2 private coastal tankers, 6 special types, 6 seagoing tugs, 2 ore carriers and 4 concrete barges.

A break-down of the month's production is shown below:

Region	Vessels	Deadweight Tons	Percentage
West Coast		_	Fercentage
West Coast	. 85	882,100	51.79
East Coast	5.2	603,300	35,54
Gulf Coast	. 19		
Great Lakes	. 19	170,200	10.03
Great Lakes	7	41 900	2 45

August production ran up a new ecord for ships delivered by an inflividual yard when the Permanente Metals Corporation of Richmond, California, delivered 27 Liberty ships nto service. Meanwhile Oregon shipbuilding Corporation, Portland,

Oregon, delivered 17 and the Eastern yard, Bethlehem-Fairfield, Baltimore, Maryland, produced 16.

The number and types of ships built by all the yards during the month follow:

SHIPYARD	No. of Vessels	Type of Vessel
Alabama Dry Dock & Shipbuilding Co	2	Tankers
Mobile, Alabama American Shipbuilding Company Cleveland, Ohio	1	Ore Carrier
Avondale Marine Ways, Inc	1	Sea-Going Tug
Westwego, Louisiana Barnes-Duluth Shipbuilding Co Duluth, Minnesota		Coastal Tankers
San Francisco, California		Concrete Barge
Bethlehem-Fairfield Shipyard, Inc		Liberty
Bethlehem-Sparrows Point Shipyard, Inc Sparrows Point, Maryland	1	C-3 Cargo Tankers
California Shipbuilding Corporation	15	Liberty
Concrete Ship Constructors	3	Concrete Barges
Consolidated Steel Corporation, Ltd	5	C-1 Cargo
Wilmington, California Federal Shipbuilding & Dry Dock Co		Special Type C-2 Cargo
Kearny, New Jersey	1	Special Type
Froemming Brothers	1	Sea-Going Tug
Milwaukee, Wisconsin General Ship and Engine Works East Boston, Massachusetts	1	Sea-Going Tug
Great Lakes Engineering Works	1	Ore Carrier
Houston Shipbuilding Corporation Houston, Texas	7	Liberty
J. A. Jones Construction Co., Inc Brunswick, Georgia	2	Liberty
J. A. Jones Construction Co., Inc		Liberty
(Richmond Shipyard No. 3) Richmond, California	1	Special Type
Kaiser Company, Inc		Tankers
Kaiser Company, Inc		Special Type
Lancaster Iron Works, Inc Perryville, Maryland		Coastal Tanker
Marinship Corporation		Tanker Liberty
Sausalito, California Moore Dry Dock Company		C-2 Cargo
Oakland, California New England Shipbuilding Corporation South Portland, Maine	8	Liberty
North Carolina Shipbuilding Company Wilmington, North Carolina	8	Liberty
Oregon Shipbuilding Corporation Portland, Oregon	17	Liberty
Pendleton Shipyards Company, Inc New Orleans, Louisiana	1	Sea-Going Tug
	1	C-1 Cargo
Pennsylvania Shipyards, Inc Beaumont, Texas	2	Sea-Going Tugs
Permanente Metals Corporation Richmond, California		Liberty
Pusey and Jones Corporation		C-1 Cargo
St. Johns River Shipbuilding Company Jacksonville, Florida		Liberty
Southeastern Shipbuilding Corporation Savannah, Georgia		Liberty
Sun Shipbuilding & Dry Dock Company Chester, Pennsylvania		Tankers
Welding Shipyards, Inc Norfolk, Virginia		Tanker
Western Pipe and Steel Company San Francisco, California	2	C-3 Cargo

250 Club Members

First to join the exclusive 250 Club was Permanente Metals Corporation yard at Richmond, California, when it delivered its 250th vessel on July 19. Now another Kaiser yard, Oregon Shipbuilding Corporation of Portland, Oregon, has entered the shipbuilding world's most exclusive circle by delivering its 250th ship to the Victory Fleet on September 13, the S. S. John I. Nolan.

California Shipbuilding Corporation on August 30 joined the inner circle of 250 Club membership when the S. S. Albert P. Ryder, a truly Gold Star ship, was launched at the Bechtel-McCone yard. The sponsor, Mrs. Joseph Corrente of Pasadena, was a Gold Star sister; the matron of honor, Mrs. Fred Stubbe, of Lomita, a Gold Star mother, The christening party represented the 75 employees of Calship who have lost members of their immediate families in the armed forces.

September Launchings

Consolidated Steel Corporation, Ltd., Wilmington, California, launched on September 17 the U.S.S. Gallup for the U.S. Maritime Commission and the U.S. Navy. Earlier in the month another ship for the Commission and Navy was sent down the ways of this yard, the U.S. S. Bisbee, on September 7. On the following day the yard launched the S.S. Cape St. Roque for the Liberty shipbuilding program.

Escort Carrier Launched

Launch of an escort carrier at Kaiser Company, Inc., Vancouver, Washington.



MARINE DEPARTMENT
A E T N A I N S U R A N C E C O.
Q U E E N I N S U R A N C E C O.
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NEW FRIGATE LAUNCHED

Waving good luck to the U. S. S. Albuquerque are (left to right) Mrs. B. L. Livingstone, sponsor; Miss Ann Krohn, flower girl; Mrs. Kenneth Krohn, maton of honor. The ship was launched at Richmond Shipyard No. 4, Richmond, Calif., on September 14.

(Official U. S. Navy photograph)

Cutter Hornbeam Launched at Duluth

The 180-foot Coast Guard Cutter Hornbeam slid down the ways at Marine Iron & Shipbuilding Co., Duluth, Minn., on August 14. At the ceremonies, Mrs. C. L. Jennison, wife of Commander Jennison, U.S.C.G.R. (T.), of the Naval Engineering Section at Coast Guard Headquarters, acted as sponsor of the cutter.

200th Liberty Ship

Bethlehem-Fairfield Shipyard, Inc., of Baltimore, Maryland, launched on September 11 their 200th Liberty ship, the S. S. Hawkins Fudske, which marked the high point in a steady climb in the output of ships in this yard. In addition to the 200 Liberty ships built by the yard, 30 special-type ships of complicated design have been built, necessitating conversion of a large portion of the yard's

facilities over a period of several months.

In recognition of the shipyard's production efforts, the Maritime Commission has made presentation of the Maritime "M" Burgee and the Maritime Eagle awards, the latter being the highest award possible for the Commission to confer upon any shipyard.

S. S. Annie Oakley

California Shipbuilding Corporation recently launched another 10,500-ton Liberty ship, Calship's 255th vessel, the S. S. Annie Oakley. Sponsored by Mrs. Wayne Cave, wife of the reporter on the Los Angeles Times-Harbor, the ship was named after the famous markswoman and vaudeville performer. In 1885 she was connected with Buffalo Bill's Wild West Show as a feature attraction, and later toured Europe as a headliner with her sharpshooting talent.

Permanente Metals Deliver

With the launching of the S. S. John W. Hoyt and S. S. John Reed on August 30, Liberty ship deliveries from the Permanente Metals Corporation shipyards at Richmond, Calif., reached a total of 27 vessels in August, one more than its national all-time record of 26 in July, according to an announcement by company officials.

The shipways of these yards, which in a bare two years rose out of mud flats on the northeast shore of San Francisco Bay to record-breaking shipbuilding feats, launched their 300th Liberty ship, the S. S. Wayne MacVeagh, on September 1 at Shipyard No. 2, Richmond.

Admission Day Launching

California's Governor Earl Warren gave an Admission Day salute to the shipbuilders at the Permanente Metals Corporation shippards, then joined in the launching ceremonies at which Mrs. Warren sponsored the S. S. Benjamin H. Brewster on September 9.

Adding a new note in launching ceremonies, the sponsor broke the bottle of champagne over a golden California bear painted on the hull of the 306th vessel, to symbolize the State's birthday. This vessel was listed as the 741st merchant ship to be built by the shipyards in California as this State's contribution to the nation's wartime shipbuilding program.

Sparrows Point Yard Launches Tankers

The Bethlehem Sparrows Point Shipyard, Inc., recently launched two huge tankers, one for the Navy, the U. S. Caliente, named after the river Rio Oja Caliente, which runs through northern New Mexico; and the S. S. Occidental, the 10th of a group of 13 tankers of its type to be launched this year by Sparrows Point Yard.

Running LIGHTS

Uho Uhen Uhere

Edited by B. H. Boynton



Carl Flesher, regional director of the Maritime Commission, addressing the San Francisco members of the Propeller Club at Shipbuilding Day Luncheon.

Shipbuilding Day Meeting of San Francisco Propellers

AMERICAN SHIPBUILDERS by C. W. Flesher

The record to date is indeed outstanding! Each day finds an average of over five ocean-going cargo ships delivered into service giving an estimated gigantic total of 19,000,000 tons for 1943.

West Coast shipbuilders should be especially proud, because more than 50 per cent of this tonnage is being

constructed in their yards and because they have produced these ships at the lowest cost with the least number of man hours and at the fastest rate.

The Axis U boats have failed due to the excellent work of our Navy in stopping them and to the magnificent work of our shipbuilders in delivering ships at the rate greatly in excess of sinkings.

Sea power—fighting and merchant ships—is sure to bring us closer each day to Victory.

After victory what then? Perhaps our biggest problem at the end of the war will be the Liberty Fleet which will comprise a fifth or more of the world's tonnage. The American shipping industry will do well to give thought to the ultimate disposition of these ships. Should they: go to for







General views of the Propeller Club's Shipbuilding Day Luncheon.

eign nations; be sold to speculative operators; or be maintained in reserve by the Government? Proposals along all of these lines are now pending

All long-range ships we are now building are standardized ships. This standardization has not been at the sacrifice of speed, propulsive efficiency, quality or fuel economy. Standardization should lower both original cost and maintenance costs.

The influence of the airplane on ship operation after the war is an unknown quantity that must be placed high on the agenda of postwar shipping plans.

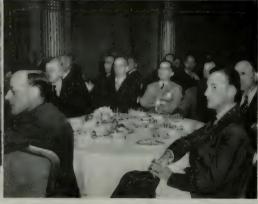
We have forged ahead in many other fields by making existing methods obsolete. We must retain that same viewpoint if we are to forge ahead in shipping.

There is still much we can do to make our ships more economical—to increase their turnaround and thereby make their earning power greater.

Light weight alloy metals, the diesel engine, gas turbines, higher steam pressures, are all fields that need marine engineering research. In all these lines our research laboratories are constantly making available large funds of scientific knowledge which can be applied by marine engineer and naval architect.

Page 98





American ingenuity solved the gigantic problem of building ships for the war, and the American bold approach will be the only way to meet the challenge of postwar shipping problems. You men of the Propeller Club deserve much credit for the tremendous support you have given the shipbuilding industry during the present global war. I know you will con-

tinue to support the Merchant Fleet which is so vital to the welfare of our nation and world commerce, and toward this end I trust we will continue to go forward together.











At the table of honor were Lee Dong, president of the Chinese Six Companies, San Francisco; Wm. Montgomery, Foreign Trade Manager of the Chamber of Commerce; Capt. M. H. Davis of the U. S. Navy; K. L. Kwong, president of the Chinese Chamber of Commerce; David E. Scoll, Assistant to Rear Admiral Emory S. Land of the U.S.M.C.; Hon. C. J. Feng, Consul General at San Francisco. On the right page appear Toastmaster M. J. Buckley, vice

Reception by APL for Chinese" Libertys"



l. J. Buckley with San Francisco's Consul General of the Chinese National Government, ion. C. J. Feng (left), and Dr. T. V. Soong's official representative, Sih Zung Yang.

With their goal set at further cementing of relations between the United States and China, the American President Lines, designated agent of the War Shipping Administration and China Defense Supplies, Inc., recently brought representatives of the two nations together to map further plans for defeating the common enemy.

The outstanding event of the meeting was the turning over to China of two Liberty ships—the S. S. Chung Shan and the S. S. Chung Cheng. The first ship was turned over to the Chinese officials at Richmond Yard Two of the Permanente Metals Corp. The vessel's name is the formal name of Dr. Sun Yat-sen, first president of the Chinese republic.

The second ship bears the formal name of the Republic's present president, Chiang Kai-shek.



president of American President Lines, who lent plenty of sparkle to the occasion with his characteristic wit; Sih Zung Yang, representing Dr. T. Y. Soong; E. Russell Lutz, vice president of APL; Colonel John H. Mellon and Paul Leake, Collector of the Port.

Delivered

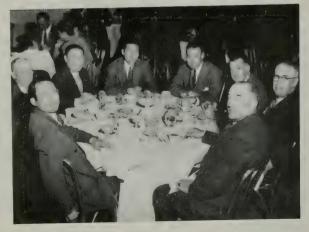
C. T. Feng, Chinese Consul General at San Francisco, speaking for Foreign Minister T. V. Soong, declared "your war is our war, and more ships will mean more cargoes for your men and our men."

David E. Scoll, War Shipping Administration assistant to Rear Admiral Emory S. Land, assured Mr. Fen that the delivery of the ships marked the beginning of China's reconstruction.

Although the ships have been turned over to China, the War Shipping Administration will retain title to them. They will operate with Chinese crews and American officers by the American President Lines for the Republic of China.

Others present at the luncheon celebration were Sih Zung Yang, representing Dr. Soong; Tseng Kuan-Hsun, China Defense Supplies; George Y. L. Wu, Chinese Vice Consul at New York, and many prominent San Francisco Chinese.





Committees for the American Merchant Marine Conference 17th Annual Meeting of the Propeller Club of the United States



Front Row—reading left to right: Lewis L. Smith, vice chairman, Ladies C. Immittee: Bonn Barber, chairman, National Resolutions Committee: Harmon Lewis, vice chairman, Finance Committee: O. B. Whitaker, president, Port of New York; John F. Gehan, general chairman, 1943 Conference Committee: Arthur M. Tode, honorary president, Propeller Club of U. S.; Ralph R. Pip Pyn; chairman, Reception Committee: John G. Thompson, secretary-treasurer, Conference Committee: Edward J. Keane, chairman, Registration Committee. Standing—from left to right: Oscar P. Dupont, chairman, Ladies' Committy e; D. H. Primores, chairman, Publicity Committee; Alcharman, Ladies' Committee; D. H. Primores, chairman, Publicity Committee; Manzi, Chairman, Hotels Committee; Milliam D. Archibald, vice chairman, Registration Committee: Of New York; Cerl F. Vander Clute, vice chairman, National Constitution

American Merchant Marine Conference to Convene

With its keynote geared to planning the transition of American shipbuilding and shipping from war to peace, the American Merchant Marine Conference is being held October 14-15 at the Waldorf-Astoria. New York, in conjunction with the 17th Annual Meeting of The Propeller Club of the United States.

Rear Admiral Emory S. Land, head of the War Shipping Administration and Chairman of the United States Maritime Commission, is scheduled to deliver the principal address at the Annual Dinner October 15, and Rear Admiral Howard L. Vickery, vice chairman of the Maritime Commission, is the presiding officer at the

Annual Meeting of the American Merchant Marine Conference which convenes earlier the same day.

The following panel discussions are being featured at the Conference under the guidance of chairmen chosen for their experience:

Federal Legislation-R. J. Baker, Secretary of the American Merchant Marine Institute, Inc.

Training Program - Captain Edward Macauley, Member, United States Maritime Commission.

Stevedoring & Cargo Handling --Joseph P. Ryan, President, International Longshoremen's Association.

Public Relations-Tom Beck, President, Crowell-Collier Publishing Co.

Maritime Safety-B. O. Pickard, Waterfront Employers Association of the Pacific Coast.

Finance-L. D. Parmelee, Executive Vice President, AGWI Steamship Lines, Inc.

Marine Insurance - Henry Reed, President, Insurance Co. of North

Education of Marine Workers-Edgar F. Kaiser, Vice President, Permanente Metals, Inc.

Air Transport-John E. Slater, Executive Vice President, American Export Lines, Inc.

Diesel Engine Propulsion in the Postwar Era-A. R. McMullin, Nordberg Manufacturing Company.

Among the leading speakers are J. Lewis Luckenbach, President of the American Bureau of Shipping; H. Gerrish Smith, President of the National Council of American Shipbuilders; Frank J. Taylor, President of the American Merchant Marine Institute; A. T. Wood, President, Lake Carriers Association; and John P. Frey, President of the Metal Trades Department, American Federation of Labor.

Very encouraging is the interest in American shipping manifested from all sections of the country as demonstrated in the Conference reservations. This interest not only comes from those directly engaged in maritime enterprise but emanates from all branches of our national life.

In this connection the following communication from Rear Admiral Emory S. Land, USN, admirably expresses the official viewpoint of the value of the Conference:

Mr. Arthur M. Tode Honorary President American Merchant Marine Conference

17 Battery Place New York 4, N. Y. Dear Mr. Tode:

Four cents out of each American's tax and War Bond dollar for the last year has been invested in the American Merchant Marine. I say "invested" because that four cents plus the brains and the sweat and the grime of the Nation's shipbuilding labor and management have produced an average of five ships a day every day, to make our merchant fleet second to none in the world.

I say "invested" because although their own vessels have been temporarily taken from them, the Nation's operators, through their skill and experience and extreme devotion to duty, have made the operation of our great wartime merchant fleet second to none in the world.

The builders, the operators, the crews and the Americans who pay taxes and buy bonds together have placed our ships in a commanding position in the trade of a world at war. It is through such organizations as the American Merchant Marine Conference that the Nation's need for shipping in peace, as well as in war, can be stressed and through which our wartime position will be retained when the world is again at peace.

Sincerely yours, E. S. Land, Chairman.

Mullenbach's Saga

The Mullenbach Electrical Mfg Co. was organized in 1927 for the purpose of manufacturing products for electrical distribution and control, including power distribution switchboards, power and light panels, motor control panels, wiring gutter, pullboxes, telephone cabinets, miscellaneous metering equipment.

The plant has the latest type machinery and equipment, including two of the latest model Acme projection welders and has punch press capacity from one to one hundred tons. Also, it is equipped with complete tool and die shop; and in addition to this, an experimental laboratory for research and development of new products.

Since Pearl Harbor many new products have been manufactured, including gun camera mounts for the U. S. Navy Bureau of Ordnance; torpedo charging rheostats for the U. S. Navy Bureau of Ships; switchboards and panelboards for the U.S. Navy Bureau of Yards and Docks: steel enclosures for watertight door switches, in accordance with U. S. Navy specifications; also they manufacture under their own patent and trade name of "Arctrol," a foot-operated remote control for dc arc welding machines, which varies the heat according to the requirements of the work, material, and operation.

Gold Star Awards

An additional gold star, for continued production achievement, to be added to the Maritime "M" pennant has been awarded by the United States Maritime Commission to The Edward Valve & Mfg. Co., Inc., East Chicago, Ind.

Gayle R. Dutton of Western Fiberglas Supply, Ltd.

Glass Insulation

Fiberglas Marine and Industrial Insulations and Dust Stop Filters, manufactured by the Owens-Corning Fiberglas Corporation are now distributed in Northern California by a new company, the Western Fiber-



C. A. Leighton

glas Supply, Ltd., with offices at 739 Bryant Street, San Francisco, 7, California.

This new organization handles Fiberglas and associated products exclusively, and maintains an adequate and competent engineering and office staff to serve the shipbuilding industry.

Operations are in charge of Gayle R. Dutton and C. A. Leighton, both having long experience in the insulation field. Mr. Leighton was formerly manager of the Cork Insulation Company in Seattle, and later in San Francisco. Mr. Dutton was recently manager of the Fiberglas department of Pacific Coast Aggregates, Inc.



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A New Los Angeles Division Plant



Semi-finished split-end eccentric rods, valve stems, etc., and billets.

Los Angeles Division of Allegheny-Ludlum Steel

Production of steam hammer forgings of special shapes such as required by Pacific Coast shipyards, munitions makers and aircraft plants, is now under way in the recently established Los Angeles division plant of Allegheny Ludlum Steel Corporation which has acquired the plant and three and one-half acre property of the C-B-S Steel & Forge Company.

W. F. Detwiler, chairman of the board, in connection with the announcement of entry into the Pacific Coast field, has long fostered the idea of manufacturing on the Coast, and it is his idea that after the war emergency is over, to expand the Los Angeles division facilities to go into actual production of steel made in the firm's eastern mills. This range of production covers a variety of special high alloy steels, stainless steels, heat resistant and abrasion resistant steels in the form of forgings and centrifugal castings, and special castings for the aircraft industry.

James H. Spade, for the past 16 years head of the organization's Pacific Coast distribution, is manager of the newly opened Los Angeles division.

PACIFIC MARINE REVIEW



The S.S. Gauntlet is Launched

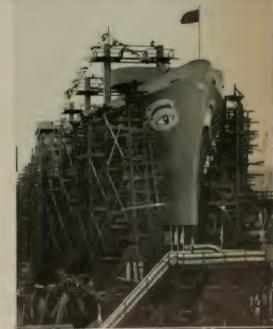
On September 8th, Hull 252 (MC 1165), under construction for the United States Maritime Commission, spectacularly became the S. S. Gauntlet when Mrs. James S. Hines, first mate of Pacific Marine Review's Skipper Jimmy Hines, crashed the traditional champagne with a lusty blow right on lucky number seven, as our halftone so clearly proves!

Moore Dry Dock Company were the builders of the C-2 type freighter. Joseph A. Moore, Sr., officiated both at the launching and later at the reception which honored the sponsor and her friends. (Mr. Moore appears with Mrs. Hines in the two top views. In the lower left picture, Mr. Hines appears to make it a trio.)

Officials of the Moore organization and of the Maritime Commission were present including Carl W. Flesher, regional director of the USMC and his charming wife.



















With the Bilge Club

Our peripatetic photographer, Roy Ryerson, caught these shots of the Bilge Club boys at their undying domino games during lunch recently. Photo Number One shows Charles E. Dayton, Wilmington Boat Works; E. L. Archibald, Sunset Oil Co.; Al Boro, J. W. Costello Supply Co., and Bill Reuter of the C. J. Hendry Co. In the second photo Charlie Parks of the Ilg Electric Ventilating Co. continues with with his lunch while Alfred E. Drew, President of the Los Angeles Board of Public Utilities and Transportation; Erle B. Smith, Rubber Products Co., and Edward Kellenberger of Marine Supply Co. study the dominoes.

In the photo at the left (No. 3) you see Bilge Clubbers H. H. Whitesel, Deconhil Shipping Co.; P. K. Countryman. Deconhil Shipping Co.; Carl F. Fennema, Wilmington Transportation Co.; Gilbert A. Reeve, Associated Oil Co., and F. A. Scheibe, Marine Surveyor, in the background. Below in Number 4 are E. O. Perkins, Deconhil Shipping Co.; Lyle Connor, Wilmington Transportation Co., and F. G. Nelson of the Texas Company. The last photo shows J. R. Waters, Dock Superintendent of the McCormick Steamship Co., holding a "double six" in a game with Captain Charles E. Larson, Operations Manager for the same firm. Carl Fennema kibbitzes in the background.





Army-Navy "E" Award Ceremony at United States Spring & Bumper Co., August 21, 1943, at Los Angeles, California.

Top right: Colonel K. B. Harmon, Chief, San Francisco Ordnance District making official presentation speech.

Center (left): Ray Rauen, Treasurer, U. S. Spring & Bumper Co.; Raiph Florex, Employee Representative, and John B. Rauen, President of the Company.

Lower right: Standing before M-5 Tank for which the organization makes Armor Plate; left: Henry Clark, General Motors, and Mr. John B. Rauen.

Joslyn & Ryan's

MORALE PROGRAM

In line with their expansion program Joslyn and Ryan, firm of Naval Architects at 149 New Montgomery, San Francisco, have stepped up their morale building program and announce excellent results.

On Monday evening, October 4, all of the company's employees and some guests gathered in the drafting room for a two hour motion picture program presented by Carl O. Lindberg, Rigging Engineer. The show included movies of the company's 1942 and 1943 picnics, as well as a Donald Duck cartoon and newsreels of the Pearl Harbor bombing, the burning of the S. S. Normandie and actual scenes from the battlefronts of Russia, Africa and Guadalcanal.

Mr. Lindberg said the purpose of the show, which was the first such program held thus far, was to enable all of the employees to become better acquainted. He pointed out that such programs tend to greatly increase good-will and cooperation on the job.





San Francisco Stage

Stewart Mudge, Al Nolan, George Jordan and Fred Doelker



Our Chairman, Bob Lillivand



George Swett (right) and pals.

Lakeside's colorful setting proved a magnet luring a goodly three score and ten Propeller Club, San Francisco, members to an afternoon of golf, dining and goodfellowship on Friday, September 10th.

A unique prize-awarding routine was followed whereby winners of golfing, field sports and door prizes were allowed to make their selections in the sequence of

Divot-diggers Showell, Peggs, Greany and O'Connor; (right): Green, Smith Haviside and Empey.





Propeller's Get-together

(Top) Propeller Secretary Gene Hoffman (left) enjoying the swell "vittles."

err achievements—from a table ladened th fifteen prizes, most of which rewards are of a War Bond nature. Donors who crited the thanks of the club included:

Al. S. Gunn, Bethlehem Steel.

George Armes, General Eng. & D. D.

The Grace Line.

Harry T. Haviside

C. J. Hendry Co.

Moore Dry Dock.
Pacific Marine Review.

Harry W. Parsons Eng. Co.

P. L. Transportation Co.

Tom Short, Thos. A. Short Co.

Geo. Swett "in behalf of Capt. Jim wett, USMC."

Tubbs Cordage Co.

Golfing honors went to Frank O'Connor of Stewart Mudge with a photo finish!

Fred Doelker presided at the banquet in e absence of President Hugh Gallagher, hairman of the event was Bob Lillivand, sisted by Ed Martin and Bern De Rochie; d the latter was pressed into service as prize awarder."

A grand party, shipmates! Let's go

The galfers are Lillevand, Swett, Spear and Vice Chairman Martin.

The trio: General Chairman of the House Committee By Pickard with P and I Blackstone and the money-collector Dad Le Count.

The four players at the bottom of the page finished eight ahead of curfew. They are Ray Demarest, Arthur Cahill, Jr., Jim Hines and Commander Kronk. The latter appears again in the big eating scene with Skipper Blackstone, Jim Dickie and Jim Hines.















Lieutenant (j.g.) Albert Scott.
USNR (right), was a very interested listener while Lieutenant
Commander Choudri, R. I. N.,
told of his battle experiences
against the Japanese before a
meeting of the Los Angeles-Long
Beach Propeller Club at September 15 meeting. Choudri extended India's thanks for American
aid in the war effort.

Port of Los Angeles - Long Beach September Meeting

Following its usual high standards, the Port of Los Angeles and Long Beach Propeller Club held an intensely interesting meeting on Wednesday, September 15, at the Biltmore Hotel in Los Angeles; the first meeting held by the group since the installation of its new officers.

High light of the meeting was a brief address by Lieutenant Commander Hajee Mohammed Siddig Choudri of the Royal Indian Navy. Commander Choudri, who spoke to the gathering on his 21st day in the United States, is here on a threemonth tour, extending the thanks of his government to the people of the United States for the war materials being sent them under the Lend-Lease agreement. These materials, he said, "are being put to excellent use against the Japanese, and it is heartening to see Indian airfields full of American planes, and its roads traveled by machines and guns from the United States.'



New President Max G. Linder, standing, faced an enthusiastic crowd when he and other newly elected officers of the Los Angeles-Long Beach Propeller Club conducted their first regular meeting on September 15th. Members were loud in their praise of the interesting program Linder arranged for his first meeting.

Other speakers on the program ere Seaman First Class Don Walton I the United States Navy and Cown hil Shapiro, also of the U.S. torces oth of the boys gave vivid accounts I experiences in battle. Seaman Valton is a veteran of the ill-fated J. S. S. Porter, which went down efore blazing Jap guns in the same reat battle which cost of life of the circraft Carrier Hornet. Since Cox'n hapiro's ship is still in the fight he buld say little regarding it, but both oys were urgent in their plea for ore of an "all out" effort to keep p ship production.

New officers of the L. A. Long each Port introduced at the meeting were: President, Max G. Linder, ransmarine Navigation Corp.; First ice President, Lee K. Vermille, buerton, Lyman and Plumb; Second ice President, Daniel Dobler, The exas Co.; Third Vice President, mes G. Craig, Craig Shipbuilding o., and Secretary-Treasurer, Hugh fiddleton, the De La Rama Steamip Co., Inc.



These boys can tell you what it's all about! Veterans of historic sea battles, Seaman First Class Don Walton and Cox'n Phil Shapiro, excited Los Angeles-Long Beach Propeller Club members with Interesting glimpes of battles they have been through, and urged members to increase output all along the line "to help end the war."

tandard Shipbuilding's riple-Keel Wooden Barge

To be used as a floating warehouse or United States Army forces overeas, the largest triple-keel wooden arge ever built in the United States, vas launched at the San Pedro yard f the Standard Shipbuilding Corporation on August 25.

The barge, shaped like a ship, is 04 feet in length and is designed to arry supplies to America's far flung attlefronts. This barge, and many thers like it scheduled to come off he ways in the following months, ill also serve as floating warehouses or supplies where such facilities are acking.

Sponsor of the ship was Mrs. Arnur Bordley, wife of Lt. Bordley, Ehief of the U. S. Army Supply Franch, Zone 9, Los Angeles. Matron f Honor was Mrs. O. J. Roseberry. D. H. "Dinty" Moore served as naster of ceremonies. Clarence E. Vagner, Mayor of Long Beach, and George H. Moore were the speakers.

Besides constructing these huge arges, Standard Shipbuilding Cororation is building large, sea going team driven tugs for the Army. Three such tugs have recently been nunched.

Pacific Gear and Tool Works Award



Captain Alvan B. Court, USN, Peted LoCodo, representing employees, and Philip L. Bannan, President of Pacific Gear and Tool Works, proudly display the Army-Navy "E" award at the presentation held at the pioneer San Francisco firm's plant recently. Western Gear Works, Seattle, Wash., another Bannan company, has also been awarded the highly coveted pennant.



Arthur N. Nelson, Works manager, receiving the Army-Navy "E" Pennant from Rear Admiral J. R. Defrees, U. S. Navy (ret.) for Phelps Dodge Corp.

"E" Award to Los Angeles Company

Rear Admiral J. R. Defrees, USN (ret.), representing the Secretary of the Navy, paid a tribute to the employees of the Los Angeles Tube Division of the Phelps Dodge Copper Products Corporation on September 16, during the ceremonies marking the raising of the Army-Navy "E" pennant over the corporation's plant in Los Angeles.

"We of the Navy know that you workers have given unstintedly of your efforts in order to boost the production of the vital materials you manufacture," he declared.

The Admiral brought cheers from the assembled workers when he said; "I have a special piece of good news for you on this occasion. You all know about the cruiser that is being built by funds raised right here in this county. You yourselves have helped to pay for it. It is a cruiser that, when it goes down the ways, will be christened the Los Angeles. Well, right now in this plant you are manufacturing the condenser tubes which are a part of its vast power plant."

Commander J. S. Arnold, USN (ret.), officiated with Admiral Defrees at the ceremonies. Presentation of the pennant was made in the grounds of the plant, 6100 Garfield

Avenue. Ceremonies were held at 3:30 p.m. so that employees of all shifts were able to be present.

The plant is the only one of its kind west of the Mississippi River. In operation less than one year, it turns out seamless brass and copper tubing for the Navy and the United States Maritime Commission. Its products also are used in the manufacturing process of 100 octane gasoline, and synthetic rubber.

Admiral Defrees presented the pennant to A. N. Nelson, works manager of the plant, who, in turn, gave it to four representative employees,

Barbara Johnson, Phyllis Stewart. ames Moore and Vernon Holsted

After the pennant was tassed Commander Arnold presented unsig ma pins to the employees of the plant, who will be privileged to wear them is long as the plant retains this Production Award.

Among the speakers at the dedi cation were Eugene W Biscailur. sheriff of Los Angeles; William C. Mullendore, vice president of the Los Angeles Chamber of Commerce. Wylie Brown, president of Phelps Dodge Copper Products Corporation; Major Howard H. Adams, who read the Army citation; and William A. Card, president of the U. M. W local. Mr. Card pledged continued high production from the members of the union at the plant, and promised they would work unceasingly to get the materials to the fighting forces until victory is won.

The ceremonies, which lasted for 45 minutes, were broadcast over radio station KECA and 16 affiliated Pacific Coast Stations of the Blue Network Company. John B. Hughes, noted news commentator, acted as Master of Ceremonies. The United



Presentation of pins to representative employees

States Navy Band, Roosevelt Base, played several selections

An interested spectator on the stand was Lieutenant Commander Hajee Mohammed Siddig Choudri, of the Royal Indian Navy.

Prior to the program of Jedication, Admiral Detrees, Commander Ar nold, Major Adams and members of the official party, representing the Army and Navy, were taken on an inspection tour of the plant





Edited by Jerry Scanlon

Captain Alexander "Alex" Swanson, oldest in years and for half a century a San Francisco Bar Pilot, passed away October 2, in San Francisco after a short illness. He was 85 years and six months.

Captain Swanson was regarded as one of the ablest mariners under any flag. During his career he piloted the largest liners in and out of the Golden Gate to and from their berths in all kinds of weather. He never had a serious mishap.

Captain Otto Lorenz, identified with Puget Sound shipping for close to 60 years, passed away in a Tacoma hospital, September 18. He was 75. He is a brother of Captain Oscar Lorenz and the late Captain Edward E. Lorenz.

At one time with his two brothers, Captain Lorenz was engaged in building or operating such well-known Puget Sound craft as the S. S. Typhoon, Tyrus, Tyconda, Thurow and Monticello. Captain J. W. Gates, for the past two years Public Relations Officer for the Twelfth Naval District, has been detached to assume new duties as professor of Naval science and tactics and commanding officer of the Naval Officers' Training Unit at the University of Minnesota. Announcement came recently from Vice Admiral J. W. Greenslade, Twelfth Naval District commandant, who simultaneously announced the appointment of Lieut. Comdr. A. R. Bosworth to succeed Captain Gates as Public Relations Officer.

Lieut. W. C. Peet, Jr., recently appointed acting Pacific Coast director of the War Shipping Administration with headquarters in San Francisco, was in Seattle the early part of August conferring with representatives of the WSA and steamship companies operating in war service.

CHINA ABOUT TO GET TWO LIBERTY'S



H. Clay Bedford, general manager, Permanente Metals Corporation (photo taken during delivery to China of two Libertys at Richmond Shipyards);
E. R. Stettinius, Undersecretary of State, and Carl W. Flesher, West Coast Regional Director of the U. S. Maritime Commission, are discussing the transfer of two Liberty ships to China to be operated by the American President Lines with American officers and manned by a Chinese crew.



Song of Elmer... the pilot who never gets tired

He holds no place in the Officer's Mess for he does not sleep or eat,

He's the Quietest Birdman ever took his place in a cockpit seat -

He joins no laughter, nor shoots the breeze, nor whistles, nor hums, nor sings,

But he's flown more planes than any man who ever wore pilot's wings...

...has Elmer!



He's an old, old hand, as old hands go in a young man's game today, For he circled the globe in 'Thirty-three with Post in the Winnie Mae-

He's an Army man, he's a Navy man, and he flies with the R.A.F.,

And the Yankees say, and the British say of pilots, he's the best ...

... is Elmer!



Often when bombers have levelled off for the last tense bombing runs,

And the bomb-bay doors are opened wide, and the gunners man the guns,

When the flak comes up as the bombs go down, and the target zone is clear,

Then who is the pilot who holds the course set by the bombardier ...?

It's Elmer!



He can hold a plane on a chosen course while the crewmen rest or sleep,

He can level off for a landing glide, or bank her sharp and steep

He can spiral up, he can spiral down, or hold her level and true-

His hydraulic muscles never tire the way human muscles do ...

... not Elmer's!



And so bombing, transport, and cargo planes, take Elmer on every flight To spare the pilot and rest the crew for emergency, storm, or fightHe needs no rest, for he never gets tired, being only a cold machine,

Just wheels and wires and gears and cogs, with brackets and stuff between ...

... is Elmer!



He wears no medals, he holds no rank. Why should he? He cannot feel

The courage that flares in time of need for he's only alloy and steel!

So when nerve is needed, the bombardier, the pilots, the gunners, too,

The navigator, and all the rest, are the boys who pull her through NOT Fimer'

\mathbf{SPERRY}

GYROSCOPE COMPANY, INC.

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· Reports of the poem - suitable for framing, with signature removed - may b. able and will out Jurge by writing the Specify (14-08cope Company.

Five club houses, four of them already in operation, have been opened in England, Scotland and Wales by the British Government for United States merchant seamen. The clubs have been turned over to the U. S. War Shipping Administration. They are located in Glasgow, Gourock and Liverpool and the fifth will be in Bristol.

They play host to men injured on the hazardous Russian run or those sailing the Atlantic convoys; survivors of torpedoings and bombings are cared for as are those awaiting assignments as crew replacements.

Victor J. Freeze, vice president of the U. S. Lines and well known on the Pacific Coast, has been elected a director. He is in charge of freight traffic. President Basil Harris made the announcement.

E. H. Price is now manager of the marine division of the Mackay Radio and Telegraph Co. He is one of the best-known and popular radio men identified with shipping activities.

The War Labor Board's War Shipping Panel is composed of Prof. E. M. Morgan, acting dean of Harvard Law School; Burton E. Oppenheim, deputy executive director of War Labor; Edward J. Barber, president of Barber S. S. Co.; Mathew Duschene of Seafarers' International Union, A. F. of L.; Bjorne Halling, National Maritime Union, C. I. O.; J. B. Bryan, Pacific American Shipowners Association.

John H. King, senior chief steward of the United States Lines, who has been serving the company in a shore post since war interrupted passenger services, has gone back to sea as chief steward of a former luxury liner now operated by the company for the government.

Persistent reports, crediting an authoritative Washington source, received by interests on the Pacific Coast, state the U. S. Maritime Commission (WSA), look favorably on resumption of limited intercoastal service. What companies formerly operating in the coast to coast trade will be selected, was not disclosed. Resumption of Canal traffic on a fairly regular schedule would relieve some of the tremendous burdens on transcontinental railroads.

Radio reports late last month said that air raids by American bombers were carried out to an extent that the Hongkong docks have been damaged so badly that Japanese were forced to suspend shipping operations. The piers and warehouses destroyed were not disclosed in the reports.

New duties have been assumed by Hugh Gallagher who was recently elevated by William P. Roth to a vice-presidency in the Matson Navigation Company. He is now a member of the United States Chamber of Commerce's committee charged with the consideration of post-war surpluses including the building and operation of ships.

Mr. Gallagher is also president of the Propeller Club of the United States, Port of San Francisco.

Conrad Meeth is the new sales manager of Moore Dry Dock Co. He succeeded Frank Depew, who resigned two months ago. Lieutenant Commander Donale "Don" Watson, well known in Pa cific Coast shipping circles, arriver recently in San Francisco with E. R Stettinius as his aide. The visit of the then lend-lease administrator, recent ly named Undersecretary of State to succeed Sumner Welles, was in connection with the turning over to China of two Liberty type ships built at Permanente Metals Corporation.

Lieutenant Commander Watson started his shipping career with the old Dollar Line and until the outbreak of the war was with the Weyerhauser Steamship Company. He is one of the youngest lieutenant commanders in the Navy. His post as aide to the new Undersecretary of State places upon him responsibilities usually given only to a much more mature officer. So this is another instance of a young man being selected for "key" posts, from the Pacific Coast.

John W. Rader is the new chief officer on the S. S. Henry Wells.

25 - Year Service Award



The co:gratulatory smiles are for J. C. Manzi (center), veteran in the Marine Department of the Sperry Gyroscope Company, Brooklyn, N. Y. He is receiving the coveted 25-year service pin from R. B. Lea, Vice President for Sales, with O. B. Whitaker, Manager of Federal and Marine Sales, wotching the presentation. Mr. Manzi was the man who installed the first Gyro-Pilot ever to be used on a sailing vessel, when in the summer of 1923 he installed the new Sperry equipment on the Specjacks. He removed all doubts as to the practical value of the Automatic Pilot on sailing craft.

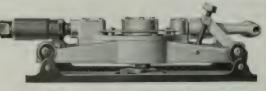
WHO'S WHO-continued

Pacthe Coast friends of Ralph J. Cordiner will be interested to learn of his appointment as assistant to the president of the General Electric Company. His office will be located at 570 Lexington Avenue, New York

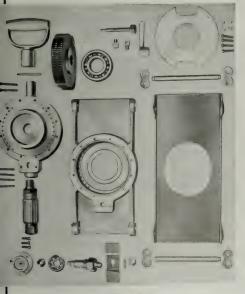
He resigned in June as vice chair man of the War Production Board, and was formerly president of Schick, Inc., of Stamford, Conn., prior to which he was manager of the Appli ance and Merchandise Department of General Electric. A I convolution of the convoluti

The Low More Many and the Part rick F. Kane. It was a low for the part of the

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F. H. ROSENCRANTS PASSES

F. H. Rosencrants, vice president of Combustion Engineering Company, Inc., and recognized international authority on steam power plants and boiler design, died suddenly at his home in Scarsdale, New York, on August 26. In his capacity as vice president he was in charge of some of the company's most important activities, including the development of the standard VU design of steam generator for a wide range of capacities, and the development of chemical recovery units for pulp mills. He also designed the first large forced circulation boiler to be



F. H. ROSENCRANTS

installed in this country—the 650, 000 lb. per hr., 2000 psi unit placed in service at the Somerset Station of Montaup Electric Company about two years ago.

Mr. Rosencrants was an active member of the American Society of Mechanical Engineers and the British Institute of Electrical Engineers and had been a frequent contributor of technical papers to various engineering societies. Among his clubs were the Engineers' Club, New York; the Propeller Club, the Whitehall Club and the Knollwood Country Club of White Plains, N. Y.

Charles L. Wheeler, vice president and general manager of the McCormick Steamship Company, is minus the services of his competent assistant Carl McDowell, who is now wearing the uniform of a junior lieutenant in the Navy.

Captain Edward Macauley, head of the training division and member of the U. S. Maritime Comission acting for President Roosevelt, conferred the Merchant Marine Distinguished Service Medal on 27-year-old Edward Michael Fetherston, third mate on a freighter.

The citation said that Fetherston acting beyond the call of duty on his ship with no defense armament except two .30 caliber machine guns on the bridge, manned one of these guns under six days of continuous attack. Homeward bound, his ship was again attacked and the courageous Third Mate again "with complete disregard for his own safety when his ship was topedoed and sunk, displaying exceptional courage and skill, moved injured men into lifeboats and personally rescued an injured and helpless foreman whose life would have been lost without his aid." The award was made in the U.S. Maritime Commission offices, Washington, D. C.

The recent death of Judge Bert E. Haney, 64, in Portland, Oregon, recalled that the eminent jurist named a member of the Ninth Circuit Court of Appeads at San Francisco, by President Roosevelt in 1935, had served as a leading member with the United States Shipping Board. He was appointed by President Wilson in the last war.

He had a keen knowledge of maritime law and was identified with many cases involving Pacific Coast steamship companies and the Shipping Board in 1919 and 1920.

Caesar Sanes, formerly first assistant engineer on the S. S. George Abernathy, was named chief engineer on the S. S. William P. Mc-Arthur.

After being overhauled, it was reported that the famed coastwise liner Yale, recently bought back by the Government from a Seattle contractor who had used her in Alaska as a workers' dormitory, made 19 knots on her trial run. This vessel is 36 years old.

Captain Hans A. Johnson, well-known master, is back at sea in command of the S. S. Joseph W. Folk, built by the Oregon Shipbuilding Company. He was formerly on the S. S. George Matthews. Others assigned to this vessel include Herbert W. Moore, as chief engineer. He was aboard a Liberty type vessel torpedoed and sunk off the African Coast last March.

James S. Dickie, vice president of American Shipbuilding Company, Cleveland, Ohio, aged 63, was drowned off a yacht in Lake Erie, Monday, September 20. A son of the late George W. Dickie, manager for many years of the Union Iron Works, San Francisco, "Jim" Dickie was well known to many San Franciscans.

Born in Denny, Scotland, in 1880, he was brought to San Francisco as an infant. Educated at St. Matthew's Academy, San Mateo, California, he went to Glasgow University in Scotland, graduating in naval architecture and marine engineering with the class of 1901.

After several years with the Union Iron Works, and the Union Oil Company, as a naval architect, and with his father in marine consultive work, he went to Cleveland, Ohio, in 1916, and worked up through the technical staff of the American Shipbuilding Company to the position of Chief Estimator and then Vice President in charge of engineering.

His widow, Lucille, survives. He was a brother of the late George W. Dickie, Jr., and the late Frederick M. Dickie. He leaves a sister, Miss Anna B. Dickie of San Mateo, California, and two brothers, W. S. Dickie, chief draftsman, hull division, Mare Island Navy Yard, and A. J. Dickie, Editor Pacific Marine Review.

The Navy Department report that a total of 17,000 persons were employed at one time during the work of raising and righting the giant liner Normandie. Of this number Merritt, Chapman and Scott, doing the main salvage job had 5000 employees on their payroll.

Peter F. Stevens, who asked to be relieved as second officer on the S. S. Hiram Bingham while in a Pacific Coast port, was succeeded by James H. Sheehy.

Alfred T. Kirkevold is the second assistant engineer on the S. S. Hiram Bingham.

WHO'S WHO-continued

Captain George G. Dockstader, one of the veteran Pacific Coast ship masters, who was formerly skipper of the S. S. John Bidwell, is the master of the new steamer S S Henry Wells

William "Billy" Russell is now chief engineer inspector for the U.S. Maritime Commission stationed at the Bethlehem Alameda yards. Rusall the other transfer or the second one is a distance with a second verse of the first or a second or annual on the Landau or North and I and the special terms on the Paris stic Coast Structure on a bring the the H. F. Alixe by vertices between Flavel, On and So Free elsee with her sister hip the North ern Pacific During the last wer he was assistant marine superintendent for the I M M in New York He returned to San Francisco from the W Programme Ralph R Setter Communication of S. F. buy as your assessor or shift free Ital A Friday H H .

Fred W. Pennington, well ly or the Parling Department of the Water days Ar Brd Cape. has been appointed Maragar et Pal-In items of Albert source Korna metal Inc., at Latribe, Penersylvania.

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ALBERT L. GUSTIN DIES



Albert L. Gustin, founder of the Gustin-Bacon Manufacturing Company of Kansas City, Missouri, and who developed a tremendous manufacturing company from a one-man start in 1898, died unexpectedly at his home on August 29, following a heart attack.

Fifty years was the span of his busy career. At 18, he moved to Kansas City from a farm home at Neponset, Illinois. Beginning as a tinner's helper in the shops of the old Kansas City, Fort Scott & Memphis railroad, he progressed into the office as a clerk to the purchasing agent. There he came in contact with the railroad supply business, which was to become his manufacturing activity.

In 1898 he set up his own business, the Gustin-Bacon Manufacturing Company, which eventually changed from the selling of railway supplies to the manufacturing of them. The Company increased through the years until it had some 500 employees and it was found advisable to open offices in New York, Chicago and San Francisco, outlets for the firm's products of railway, oil field and mill supplies. His plants were among the first to convert to war production when the present emergency began, Ninety-five per cent of the output now is in war goods and the plants fly the army-navy "E" pennant.

Before the war Mr. Gustin started to get his business into position where he could retire for at that time he was intensely interested in farming. However, the call to industry in the defense program lured him back to his factory. He built a new plant to make military goods. It is a model factory located in the Fairfax district.

Mr. Gustin is survived by his wife, a son, Albert L. Gustin, Jr., and two grandchildren.

Harold R. Swanton, executive vice president, Precision Bearings, Inc., announces the appointment of F. H. Lindus as Pacific Coast Manager of their Bower Tapered Roller Bearing Division. Mr. Lindus is well-known in the anti-friction bearing trade on the Coast, having spent eight years with the Timken Roller Bearing Company.

Honoring W. R. Grace, founder of the great steamship firm which bears his name, a Liberty ship built by Bethlehem-Fairfield yards, was christened the S. S. W. R. Grace.

The Merchant Marine must recruit from shore jobs 35,000 experienced officers and men during the next year, officials of the War Shipping Administration announced.

Joseph Curran, president of the NMU, is now classed 1-A instead of 2-A by the Selective Service, but his associates stated that they would appeal to President Roosevelt because of the necessity of his remaining head of the organization during the war period. Mr. Curran has just returned from a trip to Russia aboard a ship, to observe seamen's conditions aboard ship and to inspect facilities for them while ashore in foreign ports.

Captain Edward Macauley, Deputy Administrator, War Shipping Administration, and U. S. Maritime Commissioner, announces that merchant seamen are among the nation's most convincing "ambassadors of goodwill" and hereafter United States merchant ships will carry Army guide books to explain the life and customs of countries touched by the vessel.

Popular Frank Schirmer, who was attached to General Steamship, returned recently from the Atlantic Coast for a short furlough. He is now Lieutenant Schirmer, USN, He is the son of the late Captain George Schirmer and brother of George Jr.

Captain Roy C. Donnally, port representative of the Recruitment and Manning Organization of the WSA, left Seattle on August 4 for Washington, D. C., to take over the duties of director of foreign services of the organization. One of his new duties will be the repatriation of American seamen of ships sunk by the enemy in foreign waters.

Douglas C. Weir is now chief engineer on the S. S. Henry Wells. His second assistant is Thomas M. MacFayden.

Philip M. Crawford, president of the Propeller Club of the United States, Port of Seattle, has appointed the following nominating committee to select candidates for the annual election of the organization to be held in New York in October: Harrison J. Hard, president of the Puget Sound Tug & Barge Company and the Drummond Lighterage Company, chairman; Will H. Hayden, admiralty lawyer; William T. Hayes, marine surveyor for the United States Maritime Commission: Edward Cunningham, manager of the Pacific Marine Supply Company, and Lieut. Comdr. Winston J. Jones, USNR.

A. W. Copp, who resigned in April as general manager of the Winslow Marine Railway & Shipbuilding Company, is now manager of the Sea-Bell Shipbuilding Company, which has its plant on the West Waterway, Seattle. The Sea-Bell Company has a contract from the Maritime Commission for five large wooden barges, two of which have been launched.

It is with deep sorrow that the Geo. H. Gibson Company of New York announces the death of Geo. H. Gibson, which occurred on July 28, 1943, following a heart attack.

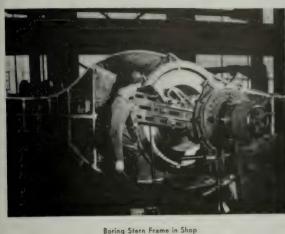
Captain William F. Hoyt, who relieved Captain Vladimir Zernin on the S. Santa Ana, is shore-side awaiting orders and the latter is back on his ship.

Abraham R. Risenberg is the radio operator.

Carl A. Wuesthoff left the S. S. Santa Ana in a Pacific Coast port in order to take an examination for chief engineer. His place was taken by Gordon George, advanced from third assistant.

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Resumption of Domestic Water Services

by W. A. Cramer

Economical transportation by water will be a fundamental necessity for the communities of the Pacific Coast, especially when seeking new industries to employ its greatly expanded population when the production of war materials ceases. Not only the industries we hope to get but, those we already have, are basically concerned with the means and the cost of distributing their products as well as the delivery at their plants of the materials used in production.

The average layman knows we will have a large number of ships available and he has read in the press of plans being discussed to put these ships to use in commerce with other countries. Nothing, on the other hand, has been said regarding the future of services in domestic waters, namely the intercoastal, coastwise and inland waterways.

The Marine Exchange of San Francisco has committees carrying on studies now which, as plans develop, will provide a pattern and a program by means of which these services in domestic waters can be secured. All communities of the Pacific Coast will be interested in learning of some of the varying facets of the problem as discussed in committee.

Discriminatory Rates

The Congressional Record of July 1, 1943, reports an inland waterway matter, which indicates what can happen to the intercoastal and coastwise services.

A decision of the Supreme Court upheld the Interstate Commerce Commission in an action by which grain moving from Chicago to eastern points now pays 8 cents a hundred pounds more for the rail haul when it comes to Chicago by inland waterways, than if it comes there by rail or down the Great Lakes.

Justice Black, in the dissenting opinion, declared that the record shows that "barges can by reason of their inherent advantages carry grain more cheaply than the railroads." He said the Commission found that inbound grain barge rates to Chicago ranged from 2.75 to 4.5 cents a hundred pounds for hauls of distances of 57 to 200 miles as contrasted with rail rates for the same distances ranging from 9.5 to 13 cents.

"I think that approval of this tariff is a defiance of the transportation act of 1920 in which Congress, fearful, in the words of several members, that the Commission was 'essentially a railroad minded body,' took every precaution to prevent discrimination against water carriers.

"Senators, particularly those from the mid-western states where the barge lines involved here were operating, were especially fearful that the Commission would do substantially what it has done in this case. House members shared the same fears. The first conference report was defeated in the House because it was believed that the bill did not offer adequate protection for water carriers against hostile Interstate Commerce Commission action. . . . As I see it, the Commission in this case has declined to

enforce Congress' policy and the court has failed to construe and enforce the act as Congress clearly intended it should.

"The second conference report says 'This measure will place upon the Interstate Commerce Commis sion, not only the power, but the duty, to protect and foster water transportation and preserve its in herent advantages.' As a closing, clinching argument intended to persuade the House that the Commission would be fair to water carriers, the statement of Commissioner Eastman (who dissented from the order of the Commission here) was quoted. Eastman assured the Congressmen interested in water transportation that certain provisions of the bill 'coupled with the admonition in the declaration of policy in section 1 that the provisions of the act be so administered as to recognize and preserve the inherent advantages of each mode of transportation, will afford adequate protection in this respect.'

'Congressman Bland, who opposed the 1940 act on the ground that it lacked sufficient safeguards to prevent action by the Commission hostile to water transportation called attention to the procedural delays in rate cases before that body, delays which he declared would be used to strangle financially weak water carriers, forcing them to yield or transfer their operation to other streams;' that the railroads knew how to obtain delay and knew the disastrous consequences that would follow to their competitors; that railroads 'seek to profit' by procedural delay; and that diversity of their interests and extent of their revenues was so great that they could survive delays which would be unendurable for competitors. The congressman was a good observer and a sound prophet."

Differential Threatened

A more recent development is a 285 page brief filed with the Interstate Commission by the nation's railroads, calling for the elimination of the 20 per cent differential that has been in effect for many years between the all-rail and rail-barge rates along the Mississippi.

In this brief the carriers requested in a prepared list of eight findings that the Commission determine there is "no justification for requiring railroads to join in differential rates with the barge lines, merely because of the lower value of the barge service to the shipper."



SUPER-POWERED — Motor invulnerable to overheating and overloading . reterior regree to overheating and overloading . reference to over 300% of minimum rated capacity over 300% of minimum rated capacity without injury to mechanism . exceeds without injury to mechanism . 5, 10, Navy 300% overload requirement. 5, 10, Navy 300% overload requirement. Maritime specifications.

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...if we do our part back home!

Our Navy will give 'em the works, if we'll give 'em all we've got back here in America. That means working a full week every week...

it means no unnecessary driving . . . it means conserving materials . . . and it means that we must all buy War Bonds regularly. Let's all do our part today and every day until the war is won!



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Manufacturers of GARTOCK Packings,
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GARLOCK



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SUPER-POWERED — Motor invulnerable to overheating and overloading . refrigerated water can be drawn at rate of over 300% of minimum rated capacity without injury to mechanism . exceeds without injury to mechanism . exceed Navy 300% overload requirement. 5, 10, and 20 gallon sizes . . . Meet all Navy and Maritime specifications.

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...if we do our part back home!

Our Navy will give 'em the works, if we'll give 'em all we've got back here in America. That means

working a full week every week . . . it means no unnecessary driving . . . it means conserving materials . . . and it means that we must all buy War Bonds regularly. Let's all do our part today and every day until the war is won!



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MANUFACTURING COMPANY

VERTICAL LUBRICATING OIL SERVICE PUMP



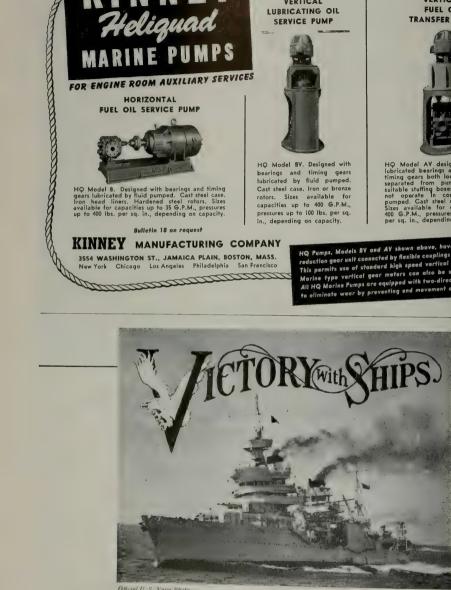
HO Model BV. Designed with bearings and timing gears lubricated by fluid pumped. Cast steel case, Iron or bronze rotors. Sizes available for capacities up to 400 G.P.M., pressures up to 100 lbs. per sq. in., depending on capacity.

Manuscon of the same of the sa FUEL OIL TRANSFER PUMP



HQ Model AV designed with grease lubricated bearings and oil-lubricated timing gears both located in housings separated from pump chamber by suitable stuffing boxes so that they do not operate in contact with fluid pumped. Cast seel case. Iron rotors. Sizes available for capacities up to 400 G.P.M., pressures up to 100 lbs. per sq. in., depending on capacity.

HQ Pumps, Models BV and AV shown above, have separate vertical reduction gear unit connected by flexible couplings to motor and pump. This permits use of standard high speed vertical marine type motor. Marine type vertical gear meters can also be used to drive pump. All HQ Marine Pumps are equipped with two-direction thrust bearings to eliminate wear by preventing end movement of shafts and rotors.



Official U. S. Navy Photo

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GEARS DECK WINCHES MANUFACTURING COMPANY ®

Builders of Fine Hoisting Machinery for Over 68 Years

WINDLASSES

CAPSTANS

TOWING ENGINES





Night view of a portion of Ingalls Pascagoula, Miss., shipyard, building all-welded vessels exclusively.

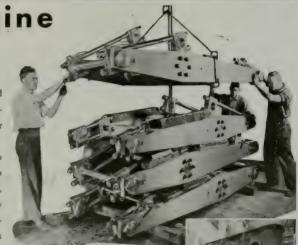
THE INGALLS SHIPBUILDING CORPORATION

Shipyardi: PASCAGGULA, MISSISSIPPI " DECATUR, ALABAMA
Office: Birmingham, Pittsburgh, New York, Washington, New Orleans, Atlanta

A Ship's Engine is Born

Eyes of the nation are focused on Portland ecause of its remarkable record in the building of Liberty Ships and the engines for hese ships.

Monarch is proud of its contribution to his record. We are furnishing the air pump ocker arms, reverse shafts, throttle valves, elief valves and starting engines for Liberty engines. This work is typical of the high qualty precision workmanship that has always been maintained throughout our organization.



Monarch Forge

and Machine Works

Portland, Oregon





TRADE PERSONALITIES



J. H. "JOE" FOUNTAIN

Sperry Gyroscope Company appoints publicity manager, J. H. (Joe) Fountain, in the public information department of the organization which is headed by J. A. Fitz, as director. Mr. Fountain, who formerly was in charge of publicity for the Canadian National Railways' System in the United States, will in addition perform certain assigned duties as special assistant to the vice president for sales of Sperry Gyroscope Co.

John Easton joins Whiting Corporation as Director of the development and standardization, according to an announcement issued by Howard D. Grant, president, succeeding A. J. Brown who has been transferred to California to be manager of the Pacific Coast Branch.

As head of the Development and Standardization Department for the company, he will have a broad field in which to apply his talent and experience in engineering and manufacturing. In addition to cranes and hoists, Whiting Corp. builds a variety of equipment for use in foundries, also special machinery for railroad repair shops, aviation maintenance and handling equipment, metal-cutting shears, chemical plant equipment and special machinery of various kinds, in which Mr. Easton has had much experience.

Prior to his appointment he was Chief of the Technical Development Division of the Civil Aeronautics Administration.

The Edward Valve & Mfg. Co., Inc., East Chicago, Ind., announces the appointment of the Dunbar Engineering Co., New York City, as sales representative for the State of Connecticut and the appointment of W. E. Bowler, Philadelphia, as sales representative for the Reading, Pa., territory effective Sept. 1.

Both the Dunbar Company and Mr. Bowler have represented the Edward Company for many years, and the new appointments increase the territory they will service.

Headquarters of the Dunbar Engineering Company continue to be at 103 Park Ave., New York, and of W. E. Bowler, at 332 Witherspoon Bldg., Philadelphia.

Everlasting Valve Co., Jersey City, N. J., announces the election of Cecil Davey as vice president and general manager. Mr. Davey started with the company 32 years ago. In 1916, he was made plant superintendent and later was also placed in charge of purchases.

This company is notable for its remarkably small turnover of employees. John H. Allen, president; Edward Boll, sales manager; and Wm. F. Madill, former vice president who died last January, all have been connected with the Company for well over 30 years. Several plant mechanics have also served for long periods.

John J. Nielsen has been named plastics specialist for the Southern



JOHN L. NIELSEN

California region by the Westin house Electric & Manufacturing C Announcement of the appointment of the appointment of the Angeles from the San Francisco office He transferred to Los Angeles from Trafford, Pa., where the companion manufactures Micarta, a laminate phenolic plastic.

Appointment of Albert C. Fetze vice president of Mack Manufactu ing Corp., as a member of the OP, truck manufacturers advisory committee, has been announced by the office of Prentiss M. Brown.



War Mothers who are also war workers raise the Army-Navy "E" with two stars which was awarded to the employees of Jenkins Bros., manufacturers of valves, at Bridgeport, Connecticut, on August 28, while Bernard J. Lee (extreme right), vice president in charge of manufacturing, looks on. This plant received the initial award in August, 1942, and this last March the first star was added. The plant also flies the Maritime "M."

Announcing . . .



the appointment of STERN FIBERGLAS SUPPLY

As Distributors in Northern California for

OWENS-CORNING FIBERGLAS CORP.

Manufacturers of

FIBERGLAS MARINE

ana

INDUSTRIAL INSULATIONS

DUST STOP FILTERS

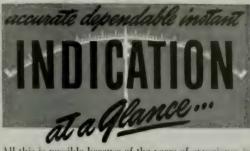
WESTERN FIBERGLAS SUPPLY

739 BRYANT STREET
SAN FRANCISCO, 7, CALIF.
EXBROOK 0963

GAYLE R. DUTTON

C. A. LEIGHTON

ALL THREE GIVE-

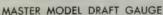


All this is possible because of the years of experience in designing and manufacturing marine gauges for the Navy, Coast Guard, and Maritime Commission, which goes into each and every Levelometer and Liquidorieter Gauge and Indicator.



LARGE MODEL LEVELOMETER FUEL GAUGE

This dial-type hydrostatic fuel level gauge gives continuous indication of the liquid fuel level at all times. Since it is remote reading it can be placed in the Engine Room or in any other desirable location aboard ship.



The pilot or engineer knows the exact indication of the vessel's draft at all times. The Master Model Draft Indicator utilizes the same dependable hydrostatic principle as the Large Model Levelometer Fuel Gauge. One or more indicators can be connected to the same





THE LIQUIDOMETER RUDDER ANGLE INDICATOR

This type of indicator which uses hydraulic transmission responds to the slightest movement of the rudder and conveys instant and continuous rudder indication to the bridge, thus saving time and fuel.

THE LIQUIDOMETER CORP.

Marine Division

41-26 37th Street, Long Island City 1, N. Y.

Cause for Celebration

Celebrating 90 years of continuous service in the brass foundry business and an outstanding record for present war work, 500 guests and employees of the M. Greenberg's Sons Company attended a dinner at the Palace Hotel, San Francisco, last month.

As one of the honored guests, Captain A. B. Court, U. S. N. (Ret.), Inspector of Naval Material, and nounced that the firm had been cited for the Navy "E."

Stuart N. Greenberg, managing owner and grandson of the founder, disclosed that present sales of the Company were the greatest in its 90 year history. He also described an old age pension plan and annuity insurance that had been installed to endow for all present employees in ten years. Mr. Greenberg then awarded hydrant-shaped service pins to all employees who had served two or more years with the Company.



STUART N. GREENBERG

Along with Captain Court as guests of honor were Angelo J. Rossi. San Francisco's Mayor; Ernest Ingold, President San Francisco Chamber of Commerce; Dr. Aurelia H.

Reinhardt, President, Mills College; Honorable Albert J. Sullivan, Chief Engineer, San Francisco.

The firm is at present operating two plants in San Francisco, and is a leading maker of bronze valves for both the U. S. Navy and U. S. Maritime Commission ships.



C. N. GUERASIMOFF

Buda Company, Harvey, Illinois, have announced the appointment of C. N. Guerasimoff, formerly assistant chief engineer, to the position of Chief Engineer of the Engine Division of the organization. He has been with the company for the past nine years during which time he served as mathematician, engineer on stress analysis, and design engineer on gasoline and Diesel engines. Prior to his appointment for the past two years he was Assistant Chief Engineer in charge of Radial Diesel Engine Divi-

Cramp Shipbuilding Company recently named L. Neal Ellis labor relations advisor. Prior to his new duties he was commissioner of conciliation with the United States Conciliation Service and was stationed in Washington, D. C.

Kenneth M. LaChance, manufacturer's agent, 904 Birks Bldg., Vancouver, B. C., has been appointed district representative for the Saverite Engineering Co. for the sale and distribution of XZIT, Fire Scale and Soot Eradicator, an dthe firm's companion product Brickseal, a refractory

Le Master-Conzett Co. Moves to Huntington Park

Formerly occupying space in the warehouse building of the Harnisch feger Corporation Branch in Los An geles, The LeMaster-Conzett Com pany, distributors in the Southwest for P&H welders and welding electrodes, is now located in new quar ters at 7220 Santa Fe Avenue, Hunt ington Park, California. The firm has been an important factor in developing the use of electric arc weld ing in both aircraft and shipbuilding industries in the Southwest. One of its recent contributions to faster welding of ships is the new widely used cradle unit combining four P&H square frame welders, which can be quickly hoisted and moved to any part of a ship under construction. With each two machines being stacked and connected in paralled by simply throwing a handy switch, the unit provides either two, three or four-man welding service depending on the amperage required for a job. Only one power input cable is needed for each cradle unit.

William J. Conley, former chairman of the Engineering Department of the University of Rochester, N. Y., was appointed consulting engineer of the Lincoln Electric Company. He will act as welding consultant for various industries, handling problems on mechanical and structural design utilizing welding, as well as metallurgical problems. His specialization in welding technique and his experience in processing and in new product development will be of great assistance to industry in efficient application of welding to design, manufacture and construction.



WILLIAM J. CONLEY



Air Can't Work Overtime

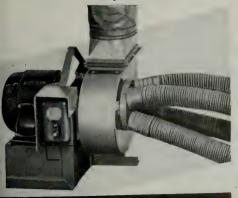
Lack of fresh air in deep tanks, double bottoms and other confined areas cuts deeply into welding production. Records prove that work is greatly increased when fresh air is forced directly to the point where it is needed.

UTILITY SHIPYARD BLOWERS

Specially designed and built for heavy duty shipyard service
—Easily portable—Interchangeable manifold on blower
scroll can be connected to pressure or suction side and up to
four separate hoses can be used for removal of fumes or
supplying of fresh air—Motors are 440 volt, 60 cycle direct
connected—Heavy wire guards on inlet and discharge protect
wheels.

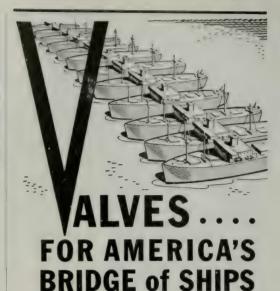
Shown below is typical hose arrangement for removing fumes from four separate places, and discharging through large diameter fabric duct. An optional arrangement is to remove the hoses and adapter from suction side and directing discharge duct to location in ship to be ventilated—over 1580 c.f.m. of fresh air can be supplied to workers. Discharge direction of blower scroll may be rotated to three different positions.

Write for descriptive literature.



UTILITY FAN CORPORATION

4851 SOUTH ALAMEDA STREET, LOS ANGELES, CALIF.





NOW available
through YOUR JOBBERS
...from Vancouver to
San Diego...the name
GREENBERG is your
Assurance of Quality!

Globe, Angle and
Cross Valves . . 1½" to 8"
Gate Valves . . . 1½" to 10"
Check Valves . . . 1½" to 10"
Hose Valves . . . 1½" to 6"



New Executive at McCulloch Engineering Corporation

The appointment of R. J. Minshall as president of the McCulloch Engineering Corporation has been announced by Robert McCulloch, founder of the Milwaukee supercharger manufacturing plant. At the same time Mr. McCulloch announced his immediate resignation so that he may "undertake a new development vital to the war effort."



R. J. MINSHALL,
Former Boeing engineer and president of Pump
Engineering Service Corporation, who has been
named to replace McGulloch.

Mr. McCulloch stated that the plant will continue to operate at its present site with the same personnel under the management of Mr. Minshall and James P. Stewart, Jeanette, Pa., who was named Assistant General Manager.



ROBERT McCULLOCH,
Founder of McCulloch Engineering Corp., who
has resigned as president of the firm to take
over other vital war work.

Mr. Minshall is also president and general manager of the Pump Engineering Service Corporation of Cleveland, and previously was vicepresident in charge of engineering for Boeing Aircraft Company, Seattle. While associated with the Boeing company he aided in the development of the original "Flying Fortress," and was awarded the Wright Brothers medal for his contributions to aeronautics, and in 1940 the New Zealand government awarded him the Musick Memorial Trophy in recognition of his efforts in increasing the safety of air travel.

Appointment of James J. Nelson at general manager of the Cramp Brass and Iron Foundries division of The Baldwin Locomotive Works is announced by Ralph Kelly, Baldwin president. Mr. Nelson joined the company in 1943 as vice president and sales manager, and when the company became affiliated with the Baldwin group, he continued as sales manager of the Cramp division. He is a member of the Propeller Club of the United States and the American Society of Naval Engineers.



JAMES J. NELSON

Another appointment in the organization is that of Kenneth F. Cramer who has been appointed district manager of the New York Office of The Baldwin Locomotive Works. He will direct New York district sales for all divisions of the company.

Another Gold Star for Firm

Another milestone in the war production record of the Webster-Brinkley Company, Seattle, Wash., was officially recorded August 25 with the presentation of an additional gold star for the company's Maritime Commission "M" Burgee.

C. W. Flesher, regional director of construction for the Maritime Commission, who gave the gold star award to George Gunn, Jr., president of the company, congratulated the plant's employees on turning out vital ship machinery "not only on time but ahead of schedule."

ON TOUR OF SHOPS AT WEBSTER-BRINKLEY

C. W. Flesher, regional director U. S. Maritime Commission, and George Gunn, Jr., president of the Webster-Brinkley Co., Seattle, Washington.





FOR CONTINUED ACHIEVEMENT

* * * * * *

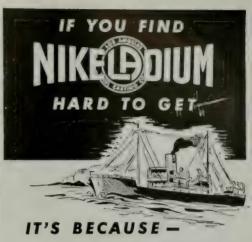
We are pleased to acknowledge the receipt of a Gold
Star for our Maritime "M"
Pennant – awarded us by
the Maritime Commission
for "continued achievement
in completing wartime
schedules"

We shall continue to produce navigational equipment at maximum capacity to the best of our ability until Victory is ours.



KELVIN & WILFRID O. WHITE CO.

38 Water St., New York, N. Y.



....... it has so many important war jobs to do...so many jobs that cannot be done as well or as quickly by any other method.

Steel castings save time and labor because they save machine work and reduce cutting and fitting—by combining many parts in one steel casting.



Now, when our industry must produce on a scale never dreamed of before, it is not surprising that the steel foundries of America are producing castings

at three times their pre-war rate. We know the victorious day of peace will come and, in resuming peace-time production, NIKELADIUM will again be as essential in peace-time products as it now is in protecting our American way of life.

NIKELADIUM Steel

GLOBE VALVES . CHECK
VALVES . ANGLE VALVES . GATE
VALVES . FLANGED FITTINGS



SOLD THROUGH DEALERS ONLY . SEND FOR COMPLETE STOCK LIST



Twelfth Naval District Current Launchings

Pollock Shipyard, Stockton, California, launched a new tender, the U. S. S. Snowbell, on September 14, with Mrs. Gordon Pollock, wife of assistant manager of the building yard, as sponsor.

Kaiser Yard No. 4, Richmond, California, launched the U. S. S. Albuquerque on September 14, a frigate sponsored by Mrs. B. L. Livingstone, chosen by Mayor Clyde Tingley of Albuquerque to represent the city.

Bethlehem Steel Company, San Francisco, on September 5 sent down the ways a destroyer escort (DE), the U. S. S. Whitehurst, sponsored by Mrs. Robbie Whitehurst of New Bern, North Carolina. The ship was named for the late Ensign Henry Purefoy Whitehurst, USN, who was killed in action aboard the U. S. S. Astoria, in the Battle of the Solo-

mon Islands. The sponsor is Ensign Whitehurst's mother.

United Engineering Co., Alameda California, launched a fleet tug U. S. S. Takelma, with Mrs. George Sutherland, wife of United Engineer ing Company manager, as sponsor.

General Engineering Company Alameda, launched on September 12 the fleet minesweeper, U. S. S. Ransom, with Mrs. Dwight Dexter of San Francisco, wife of Commander Dwight Dexter, U. S. Coast Guard, as sponsor.

Dravo Corporation at Nevilla Island, Pittsburgh, Pennsylvania, on September 11 launched a Destroyer Escort vessel, the U. S. S. Jenks sponsored by Mrs. Maurice L. Jenks at ceremonies held at the eastern shipyard.

Marinship Corporation, Sausalito, California, launched the S. S. Mission Santa Cruz, a U. S. Maritime Commission tanker, on August 31. Sponsored by Mrs. F. C. Sewell, the ship was named for the Mission Santa Cruz, founded in 1791. The original building was destroyed by an earthquake in 1857 and later reproduction was completed in 1931.

Rigger's Forming Vise

A portable rigger's forming vise that handles wire rope and cable from \%" to 11/4" dia. without adapters in the newest development from Patrick-McDermott & Co., Los Angeles Calif.

Splicing and clamping operation as well as the forming of cable into an eye or around a thimble are easily



Rigger's forming vise.

nandled in a minimum amount of ime. This is the result of a design for screw shaft levers which, according to the manufacturer, gives complete, easy jaw and back control.

Cable is securely held, and the new rise is equipped with guards to proceed against cable and thread friction it is of durable construction to withstand the spring and strain of heavy table, weighs approximately 50 lbs., and has a base length of 15" and a base width of 14", thus adding to convenience in handling.

BOOK REVIEWS

"Marine Pumps," published by Warren Steam Pump Company, Inc., Warren. Massachusetts, price \$1.00; thoroughly and graphically explains to the marine engine room personnel some information relative to pumps for shipboard services. The first part is a description of pump services on shipboard and discussion on some of the problems affecting pumps. The second part is a description of pumps, the third part covers pump installation, and the fourth part the operation, maintenance and repair of shipboard pumping systems.

"Studies in Arc Welding—Design, Manufacture and Construction," is a first edition, published by The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio; 1295 pages; fully indexed, bound in semi-flexible simulated leather, 6 x 9 inches. Priced in the United States at \$1.50 per copy.

The volume is the result of the careful editing of papers on arc welding practice representing the work of 113 engineers, designers, work managers, superintendents, executives, foremen and other technicians. The book provides engineering, technical and trade schools with a tremendous amount of authentic arc welding design applications, together with welding data which may be translated into new applications.

The contents of the book are arranged in nine sections with 98 chapters. Each chapter covers a specific design subject; each section covers a particular field, such as aircraft, railroad, etc.



Remler system goes the call to abandon ship. The command reaches every man aboard, no one is forgotten.

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FIG. 1317A

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The Diamond Jubilee edition of the National Malleable and Steel Castings Company is a most informative brochure which covers the company's history, plants and products, management and the company's contribution to the war effort

Bulletin No. 15, The Multival Lubricating System, a product of Facval, shows a complete line of fittings to simplify Multival in cullations, and explains the portable gue, and the rotary valve handle of this line.

Weldwood, a booklet recently published by the United States Plywood Corporation, delives into the latest manufacturing techniques utilized in producing the waterproof Weldwood, in the aircraft and marine industries.

Fiberglas, a new basic material, is a pliable glass, developed by the Owens-Corning Fiberglas Corporation. A brochure explains its development, properties, manufacture and uses in the war program.

Marvel, the high-speed edge hole saws, a new bulletin put out by the Armstrong-Blum Mfg. Co., contains stock sizes and list prices as well as descriptive matter and illustrations on the high speed edge hole saws.

Northill Company, Inc., Los Angeles, has just issued a booklet, The Anchoring Handbook, which briefly

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covers the history and development of the anchor and fully explains how to choose your anchorage, weighing anchor, holding power and care of ground tackle. It includes charts on the approximate size of regular and emergency anchors for cruising boats, required anchor weight based on gross tonnage, diameter of manila and chain suitable for various anchor weights, and other charts.

Westco Industrial Pumps, a catalog printed by the Joshua Hendy Iron Works, Pomona Pump Co. Division, contains designs in detail of the Westco turbine type pumps, their principle of operation and operating characteristics. Blueprint and photographs with graphs fully illustrate the pump.

The Landley Company of New York has published a pamphlet on lifeboat davits and equipment. It describes the Steward mechanical davits, lifeboat winches, and sheath screw davits and release gear equipment and is illustrated with charts and graphic illustrations.

The C-O-Two Fire Equipment Company, Newark, New Jersey, has issued a new booklet describing its line of portable and built-in carbon dioxide fire extinguishing equipment and smoke-detecing systems.

A new catalog on Automatic Proportioning Equipment is printed by Proportioners, Inc. (Bulletin No. 1700). In addition to illustrating and describing the complete line of constant rate and flow responsive proportioning equipment, the catalog contains many flow diagrams showing latest applications for the process industries.

Paragon-Revolute Handbook of Print-Making and Processing is an instructive booklet designed to save time and effort on the part of those charged with the installation and supervision of reproduction departments.

Ermeto safety tube and pipe fittings, manufactured by the Weatherhead Company, Cleveland, are described in a special instruction folder detailing installation procedure. The folder has four pages of instructions in a clear, concise manner, with photographs to illustrate each step of the assembly and disassembly.

Motor and generator literature printed by Crocker-Wheeler Electric Manufacturing Co., Division of Joshua Hendy Iron Works, Ampere, N. J., fully describes and illustrates the following items available by the company: Squirrel Cage Motors; Direct Current Motors; Shipboard Pump Motors; and Shipboard Auxiliary Generators.

The new four-page bulletin containing complete catalog information on Photoswitch Electronic Level Controls has recently been published by Photoswitch Incorporated.

The new Ideal Maintenance Handbook tells how to keep motors and generators operating continuously at peak efficiency without dismantling. Other Ideal equipment is also illustrated and described, including: industrial electrical equipment; variable speed transmissions; machine tool accessories; wiring devices and tools; and rechargeable battery for flashlights.

Conchrane Reprints—Two reprints, Nos. 24 and 26, have just been published by Cochrane Corporation, Philadelphia, Pa. The subject of the

first is "Separating Oil from Steam," by W. C. Bennett. A finding chart for oil separator selection follows an introductory text. "New Sizing Data on Relief Valves," also by Mr. Bennett, is the subject of No. 26. This folder is composed of text and tables concerning factors determining valve size, and supplies data to show how size and permitted pressure drop affect the capacity that can be handled.

How to Know Valves, just released by the Reading-Pratt & Cady Division of American Chain & Cable Company, Inc., is a series of charts designed to take the mystery out of valves for the many new maintenance workers in industry today. With simplicity as keynote of this "Recognition" chart, a breakdown of valves into four basic types shows simple, visual line illustrations, and explains what service the four types of valves perform, how they operate and where valves are used.

Trouble Shooter, the vest pocket manual of the Crane Division of Harnischfeger Corporation, Milwaukee, Wisconsin, is arranged in simple question and answer form and indexed for quick reference by men in charge of servicing overhead traveling cranes.

Pipe Templates for Welded Fittings, a new bulletin, tells how to fabricate fittings for welded piping installations by means of flame-cutting and welding. It is published by the Air Reduction Company of New York, and shows how to draw up and use paper templates for flame-cutting pipe to assure accurate, close fitting connections. Other methods outlined will save guesswork and spoilage and will help assure efficient fabrication.

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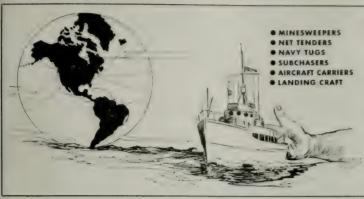
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BOOK REVIEW

"Square Knot, Tatting, Fringe and Needle Work," by Raoul Graumont and John Hensel, is a 128-page book which sells for \$1.50.

The particular subject of this new volume is square knotting or the processes of plaiting and knotting threads together-Macramé as it is called in France, where it was first introduced from Arabia in the 14th century. In the English-speaking world these same processes are called square knotting. It has a wide and varied appeal to equally wide and varied groups.

The art of knotting is an established hobby. Square knotting, however, extends the art of knotting into the utilitarian and the more practical applications. It is on an equality with knitting, crocheting and embroidery as a pleasant and practical diversion. It is deservedly popular in vocational, scout and other youth-training activities. In occupational therapy, square knotting bestows its greatest pleasures.

New England Ship Launchings

Two Liberty ships bearing the names of men from Maine who became notables in American life were sent down the ways of the New England Shipbuilding Corp., Portland, Maine, on August 31. They were the Cyrus H. K. Curtis and the William DeWitt Hyde. On the same day Rear Admiral Emory S. Land, chairman of the U.S. Maritime Commission and War Shipping Administrator, presented the "M" Pennant, Maritime Flag and Labor Merit Badges to the management and workers at the yard.

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WHO'S WHO-continued

Joseph M. McBride has been appointed chief engineer on the S. S. Charles F. Amidon, a new ship built at Oregon Shipbuilding yards. His first assistant is Jack B. Curry; second assistant is Fred Paulos; and third assistant, Vernon Brown.

Richard P. Golden is chief officer on the ship and Cuthbert M. Love, formerly third officer on the S. S. Santa Ana, is in the same berth on the Charles F. Amidon.

Seventy-Five 1700-hp Diesels

The Nordberg Manufacturing Company has been awarded an order to build the diesel propulsion engines for seventy-five 4000-ton coastal motorships.

Each ship will have a 6-cylinder two-cycle diesel direct connected to the propeller shaft. The cylinders will have a 21/2-inch bore and a stroke of 29 inches, and will develop 1700 shp at 180 rpm, their normal full speed for this application. The engines are practically the same as the 92 Nordberg prime movers built or building for the U. S. Maritime Commission C-1 motorships.

HOT OFF THE PRESS

"Giving a Lift to the World for Fifty Years," 50th anniversary publication of Sedgwick Machine Works, Inc., New York, presents a record, with emphasis on the importance that hoisting equipment has played and will continue to play in the lives and habits of people in their homes and their commercial and professional pursuits.

"Fairbanks-Morse Diesels for Profitable Power" includes a brief history of the company's background, together with particulars on design, manufacture and service facilities applicable to the commercial line of marine and stationary diesels.

New Turbine-Electric Drive for Ship Propulsion, a booklet issued by General Electric Co., explains that type of equipment, and is useful to shipbuilders and operators faced with problems of training personnel, and the installation, operation and maintenance of turbines.

Industry's Magic Carpet, a catalog printed by Kerlow Steel Flooring Company, with unusual presentation of open steel flooring, gratings and safety steps for use in industrial plants, features large illustrations which clearly show the proportions and construction of many different designs of open steel flooring, and gives graphic explanations of its advanges.

"If It's Piping, Contact Flori," a booklet issued by the Flori Pipe Company of St Louis, Mo. covers pipe fabrication, its various uses, and lists of present market prices for every conceivable kind and size of fabricated piping.

The following catalogs and bulletins are available from J. O. & C. U. Martin, 637 Minna Street, San Francisco, California: Decatur Pump Co. Catalog Bulletin No. 15-04; Decatur

Pump Co. Catalog Bulletin No. 42. Foster Engineering Co. Catalog No. 70: Kewanee Boiler Corporation Catalog No. 80k. J. E. Lonergan Co. Catalog No. 500. Ames Hydrovac Corporation Bulletin No. 1000A; Fedders Manufacturing Co. Catalog No. 575; Wright-Austin Bulletin No. 40; King Engineering Corporation "Liquid Measurement with the King-Gage"; Thomas A. Edison, Inc., "Edison Instruments and Controls"; Wagener Steam Pump Co. Bulletin No. 65.



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Shipowners Association of the Pacific Coast

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Pacific MARINE REVIEW

Steamship-Airplane Combinations

Progress in aeronautical research, I in the practical applications of results of that research, has been spectacular in the years just prior and during the present war that at was a seven-day wonder ten ers back is now very commonplace. e read in this morning's paper that, f thousands of aircraft crossing North Atlantic this year, less than f of one per cent were lost en ite up to September 30." In other rds, the world's worst transoceanic plane flight is now statistically as e as or safer than is the same ssing by surface craft.

When any means of transportan gets into the safe, commonplace ase of its development it is time it the Federal agencies, appointed safeguard that development, buld overhaul the laws, rules and culations relating thereto, and put tim on a safe commercial level.

All indications point to airplane ates (world-wide after the war) on icale that will bring the most reste portions of the globe within a whours of the centers of civilizate. This development should logically follow two lines of advance, viz. Seenger and fast express plane networks operated by the air lines, and auxiliary services to land and sea face lines.

For some reason, the Civil Aeroatics Board Federal Agency, ensted with the supervision of American air transportation, has construed the Civil Aeronauties Act of 1938 as, "expressing an intent on the part of Congress that no carrier is to be permitted to engage in air transportation unless such air transportation enables such carrier to use aircraft in its own operations." Therefore, unless the Civil Aeronautics Board or Congress, or both, changes its mind or their collective minds, American aeronautics is to be deprived of one very important and far-reaching natural line of development.

Speaking on this point at the recent Merchant Marine Conference in New York, Henry F. Grady of San Francisco, president of the American President Lines, pointed out that:

"The American steamship industry is not seeking protection from airline competition. It is merely asking the right to meet that competition on an even basis, to be allowed the use of air transport to develop and advance further its own service in accordance with demands of the trade and in the public interest.

"No individual nor industry owns a patent on the art of flying. It is a science that should be available to all who are qualified to use it in advancing the cause of social and business welfare. To deny its use to the steamship industry would be equivalent to putting the latter in an economic straight-jacket, which in time might

mean the virtual dissolution of the American Merchant Murine

"In the case of strumship companies, we envision the utilication of air craft integrated with ships over the customary formed, between the customary terminds, as a combined transportation system. There are many advantages which would flow from such an operation. Most of the steamship companies will have operated over these same routes for a great many years, through their main and branch offices and agencies, reaching into the countries served.

"We are going to have to compete against just such unified services on the part of other maritime nations when we bid for our share of postwar world markets.

"Many foreign steamship companies, notably Cunard-White Star, Bank and P and O., have announced their intention of utilizing aircraft in international trade in conjuncton with their post-war steamship services. A few months ago a new Swedish company was organized for the development of Sweden's own inter-Continental air routes after the war, particularly those to the United States. Officials of the Johnson Line, the Trans-Atlantic Line and the Svea Steamship Company, were listed as the principal backers of the new airline.

"France, Germany, Holland and other maritime nations already had integrated air and water combinations prior to the outbreak of World War II, and it is presumed that all such countries which are able to resume international trade will continue according to the pattern set.

"If American steamship companies are denied a similar prvilege of utilizing aircraft in international trade they will be at a great competitive disadvantage. Denial of the privilege will not only hurt our merchant marine, but will hamper and retard development of our air transport systems as well—because each separately must then compete against the unified air and water combinations of the world's leading maritime nations."



Passing under the Bay Bridge on delivery.

T BELAIR ISLAND, just south of South San Francisco, the well-known California firm of Barrett and Hilp have built a novel shipyard and are in production on a contract to build 26 ship-shaped reinforced concrete barges for the U. S. Maritime Commission.

Belair Island is practically surrounded by marshlands and tidal flats. The island itself is of a serpentine formation terminating in impervious clay, which disappears under the marshlands.

Surveys determined that a turning basin approximately 60 feet by 1500 feet could be excavated adjacent to the serpentine and clay formation; that a channel 9000 feet long and 200 feet wide, giving 12 feet depth at low tide, could be dredged and would give access between the turning basin and deep water in the bay; that the clay and serpentine would

form adequate foundation for weights involved in construction these barges in basins; and that adjacent hill would supply an rock-fill for bringing the yard surf to the desired elevation.

With characteristic application brains and brawn, and using mod American dirt-moving machine. Barrett and Hilp laid out a 70-a site and with steam shovels, pow scrapers and bulldozers scooped six construction basins 400 feet lo 84 feet wide and 21 feet deep fithe surface level of the yard.

The sides and inshore end of ea basin were bulkheaded with 10-in timbers. These timber bulkhe have no supporting braces inside the basin but are tied to each other with tier rods laid across the area between the inshore ends of each basin afor the outside bulkhead of each e basin. At the outboard end of each abasin a heavy reinforced concrutters was built at each side wisuitable groove to take a caisson gas Sheet steel piling was driven into the

Stern of barge. Note the reflection of water ripples under counter, showing mirrorlike finish.

clay at the water end of each basin to prevent seepage.

Between the buttresses at the water end of each basin, a hollow reinforced concrete caisson was constructed 64 feet long, 21 feet deep, and 15 feet wide, which could, at will, be partially filled with water and sunk across the end of basin forming a watertight gate or be dewatered and floated out of the way when a ship was ready to come out of the basin Three 18-inch valves in each caisson permit flooding of the basin for floating a barge out

Each basin was floored with a reinforced concrete slab 12 inches thick. In this slab were imbedded 6" x 6" redwood timbers or sleepers on two-foot centers, and running across the entire width of the basin. Spiked to these sleepers were 2" x 6" timbers on 12-inch ecenters running the length of the basin. On these longitudinal timbers %-inch waterproof plywood was laid to form a permanent mold for the outside surface of the bottom of the concrete barge hull up to the 12-inch waterline.

Another basin of same dimensions, but some five feet deeper, was excavated and equipped as a painting and inspection dock. In this dock a finished barge rests with five feet clearance under the keel, allowing complete inspection and economical repair and painting. The construction basins are equipped with complete forms for the exterior of the barge hull. These forms are made up in sections with their bottom edges fitting exactly the 12-inch waterline curve of the hull design. Each section is approximately 30 feet in length and the full depth of the hull. The sections are built on strong self-supporting exterior framing on rollers and can be moved back against the wall of the basin to allow five feet clearance from the finished hull on each side of the barge.

At each end of the barge hull are heavy steel plate structures forming the stem and stern posts to which are welded the ends of many of the continuous heavy reinforcing rods that give the structure its tensile strength. With all the exterior forms and these two steel plate members in place, there is a complete mold for the exterior of the hull.

Raising the Jack Flag at the prow of Belair No. 1 as the Army takes over the vessel.





Hull Design

The barges being built at this yard are designed to carry dry cargoes by the engineering firm of Ellison and King and the naval architectural and marine engineering firm of Joslyn and Ryan, both of San Francisco. Charles E. Andrew is consulting engineer on the project. All design features and construction progress are under continuous check and inspection by the American Bureau of Shipping and the U. S. Maritime Commission.

In the design of any ship, the loaded hull is considered as a structural beam supported by waves. Since waves are continuously in motion, this structural beam is always alternating between two extreme positions of loading. It is either wave-supported at each end with tension on bottom members and compression on upper members, or wave-supported at the center with tension on upper members and compression on bottom members. Under ordinary ocean conditions these extremes alternate about 250 times an hour. In addition to these strains, there are great impact shocks, such as occur when waves, containing tons of sea water, smash against the sides of the hull or break and drop on the decks. It is, therefore, necessary to provide concentrations of tensile strength members in the deck and upper sides and in the bottom and to provide ample stiffness and panel stability in the deck, sides and bottom.

In concrete construction, the tensile strength must be provided by steel reinforcing bars, and, in these barge hulls, all of the tensile problems are solved by a well-designed integrated grouping of these bars throughout the structural members and the panels. These bars are wired or welded together to form a complete network of heavy steel.

The design calls for a ship-shaped vessel with an overall length of 365 feet, a beam of 54 feet, a depth amidships of 35 feet, a loaded displacement of 10,950 long tons on 26 feet 3 inches draft. At this draft, the cargo capacity would be about 6300 tons, so that the weight of the barge. without cargo, would be 4650 long tons.

(1) Precast test bulkhead and section of

(2) Piled-up deck forms.

(3) Forms for bulkhead braces on trail-

ers ready to be placed in hull. (4) Form for prefabrication and assembly of fantail reinforcing.

Structural Details

Running the entire length of the hip is a 24x52-inch keelson, being he largest single structural unit of he entire hull. In the upper portion f this unit are forty 114 in, round ars 350 ft. in length and in the lower ortion of the unit are sixty-eight in round bars. The concentraions of the bars in the lower section s so great that they cannot all be ontained in the 24-in, width of the eelson and tee extensions are added o each side at the bottom slab

At the gunwale eighteen 114/in. he ship. Additional full length bars are used in the two 14x40-in. longiudinal deck girders placed each side

of the hatch openings.

In each deck girder there are ten 1-in. and thirty-seven 11/4-in. bars for op reinforcing and sixteen 114-inch pars at the bottom of the beam. As in the case of the keelson, the cross section is inadequate to accommodate ill the upper bars and a tee is exended on the side away from the hatches to accommodate the reinforcement.

The bulkheads separating the cargo holds are spaced 32 ft. center to center. The bulkhead slab varies from 7 in. at the bottom to $4\frac{1}{2}$ in. at the top and it is stiffened with five equally spaced vertical stiffeners.

The 32 ft. between bulkheads is divided into five spaces of 6.4 ft. each by transverse frames. The slabs in conjunction with the frames, bulkheads, deck girders and keelson constitute the primary elements of the framing system.

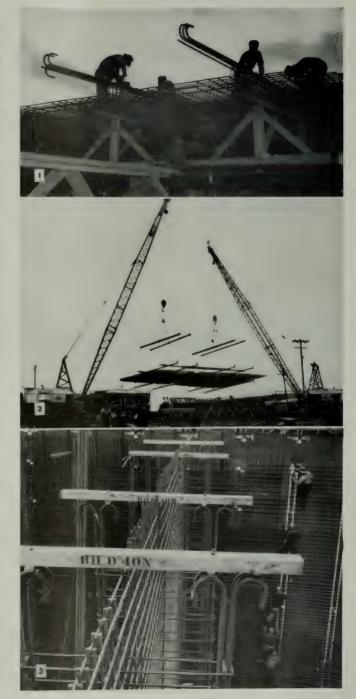
The bottom slab of the ship is 7 nches thick, reinforced with two ayers of 11/4-in, round longitudinal bars, 4 in. on centers, and two layers of 1-in. round transverse bars spaced

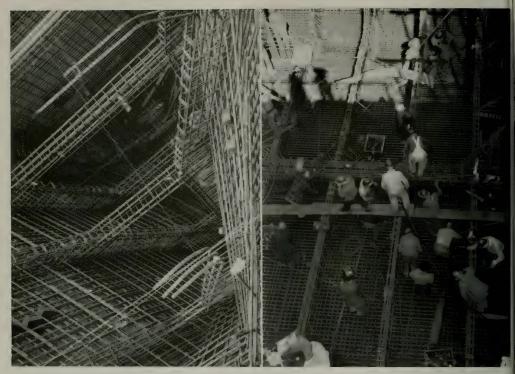
at $4\frac{1}{2}$ -in. and 9 inches.

The deck varies in thickness from 5 inches to 61/4-inches and the side shell slab is 6" thick. The reinforcng in the deck and side shell is some. what lighter than at the bottom of he ship.

A 1/8-in. concrete coverage is alowed over steel at the outside from

- (1) Prefabricating a section of the reinforcing steel at Belair Shipyards.
- (2) Traveling cranes, working in tandem, move a prefabricated bulkhead reinforcement toward one of the hulls, where it will be lowered into
- (3) Prefabricated bulkhead reinforcement in position in the hult.





Looking down into forepeak reinforcing steel.

Looking down into one of the holds, showing workmen laying reinforcing bars for keelson and frames.

the bottom and sides, and $\frac{3}{4}$ in, at deck. The concrete coverage on the inside of the hull is limited to $\frac{1}{2}$ inch.

The cargo space is floored with 6in. planks supported on the concrete frames. On top of the planking, 3/16-in. steel plate is laid, and under the hatches the plating is increased to 3/4 inch in thickness.

Yard Layout

The yard is laid out to give the highest efficiency of operation. Forms are assembled outside the hull on specially designed jigs, and are placed by cranes as units. Wherever possible, reinforcing steel is prefabricated into large units in the yard and placed in the hull by cranes. This method is used for frames, bulkheads, side shell reinforcing, and numerous other items. The longitudinal bars at the deck and bottom of the hull are continuous, without splices for their full length. These bars, 11/4 in. round, are delivered to the yard in 64-foot lengths and are flash-welded

before placing into lengths up to 350

The flash-welders are mounted on cars running on a track that traverses the width of the yard across the inshore end of the basins. The commercial length bars are stored on racks in line with the basins and inshore from the tracks. The welder is pulled in line with each storage rack as bars are required and the bars are pulled through, welded in lengths required, and stored in racks ready for use on the hull. From this latter storage, they are pulled through a 12inch tube onto the hull and laid out in place as needed. The whole operation is straight line

Concrete Procedure

A novel method has been followed in the building of all interior forms so that 12-in. layers of concrete will raise continually in all holds. As each 12-in. pour is accomplished, another 12-in. panel is dropped into place. The result of the 12-in. depth of

pouring has been the entire elimination of voids in the finished concrete. Practically all interior forms are removable, and may be used several times over. A racheted elevating pouring platform is attached to the frame forms to facilitate concrete placing operations.

The lightweight concrete used for the hulls is made with "Haydite," an aggregate manufactured at McNear's Point, near San Rafael, Calif., and delivered to the yard on barges. The concrete specifications call for a compressive strength of 5000 lbs. per sq. in. at the age of 28 days. The cement content of the mix is 6 sk. per yd., and the resulting concrete weighs approximately 118 lbs. per cu. ft. Natural sands are being held to a minimum in the mix in order to accomplish this light weight.

Cement is delivered directly from the mill in tank trucks and is raised

ON THE FACING PAGE:
Outer forms in place in basin and reinforcing steel network in place.





Flacing of deck forms and bulwark reinforcing bars.

by mechanical conveying equipment to hoppers above the batching plant, which is located adjacent to Dock No. 1 so that the hauling of concrete is held to a minimum. All docks are within 1000 ft. of the batching plant, where two 2-yd. tilting mixers have been installed. Four 4-yd. agitating trucks are used for the delivery of all concrete to hoppers at deck level of the several hulls. It is then chuted to stages halfway down the hull side, from which point concrete buggies

carry it to secondary chutes with flexible tube extensions to carry it to the point of placement. In pouring the keelson and deck girders, with their heavy concentration of reinforcing bars, all concrete for the lower section is poured into the side of the form near the center of the beam, where no steel is carried. After the level of concrete reaches that point, the opening in the form is closed and the remainder is worked through the interstices of the upper steel.

The concrete is placed in thre separate pours, each of which is continuous until completed. The first includes the bottom slab and bilges and shell to a height of 8 ft. 2 in. The second pour completes the shell frames and bulkheads to below the deck level, while the third pour completes the girders, deck and miscellaneous items of the superstructure.

Electric vibrators of a small enough diameter to pass between reinforcing bars are used constantly by all pouring crews. This has contributed in a large measure to the excellent type of poured concrete that is being obtained.

Launching

When the hull is ready to be floated the side forms are moved back the end forms lifted out, and the valves in the caisson gate opened to flood the construction basin. The caisson is then dewatered and floated to one side, the hull floats off the permanent bottom form and is towed out of the construction basin and nudged into the inspection and painting basin. When pronounced ready, she is again floated and taken to the outfitting pier, where she is outfitted.

Each barge has a house on the poop wherein are fitted quarters for a crew, complete with galley, messroom, baths and all necessary santary arrangements. Forward the tow rope is attached by a large round bollard built solidly into the hull structure just aft of the stem. The tow rope runs out from this bollard through a roller chock in the stem.

Just aft of the towrope bollard is the electric drive anchor windlass fitted with Naco anchor chain. A Fairbanks-Morse generating set provides power for this windlass and for



Butt welding the longitudinal reinforcing bars to form a 350-foot continuous bar.

pumps and lights on the forward tion of the barge

Att there is a pair of Fairbanks are generating sets which provide wer for steering gear, a warping a anchor winch, pumps, ventilation a linguist.

At the Belair vard, William Law as project manager, George Meever is general superintendent, and d Crocker is project engineer, all Barrett and Hilp. Raymond C derson is resident engineer for the 8 Maritime Commission

Names of minerals will be used to agnate the 26 reinforced concrete rges being built at Belair shipyard.

No. 1 was delivered as Agate, No. is Chromite, Nos 3 and 4 as Flint d Granite respectively.

The next seven, in order, will be caphite, Gypsum, Mica, Onyx, Cartz, Silica and Slate, according to 2 announcement of the Maritime commission.

L. N. McMackin, principal hull inector for the United States Marine Commission, has pronounced the cond reinforced concrete barge

Removing forms from a poured bulkhead and hosing down.

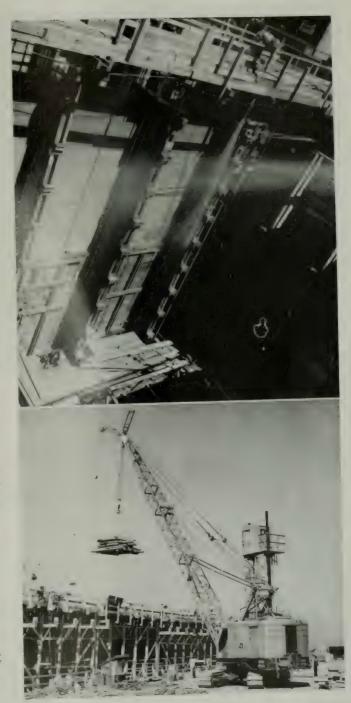
uilt by Barrett and Hilp as "the fint concrete ship ever constructed."

Perfection in concrete is measured number of man hours required for noothing and patching rough places ter the forms have been removed.

"The No. 2 barge at the yard, hich will be known as Chromite, quired only 180 man-hours for this ork as compared with a general verage of 3000 man-hours," according to Mr. McMackin. "This makes he job 99 per cent perfect."

This record of excellence is due to ne vigilance of E. B. Hanson, conrete control engineer in charge of he testing laboratory at the yard lus similar care in handling and placing the concrete, as well as rigid injection by engineers of both the daritime Commission and the builders.

Caterpillar crane on slip between basins. Note tower structure to enable operator to spot loads in barge hulls.





Flacing of deck forms and bulwark reinforcing bars.

by mechanical conveying equipment to hoppers above the batching plant, which is located adjacent to Dock No. 1 so that the hauling of concrete is held to a minimum. All docks are within 1000 ft. of the batching plant, where two 2-yd. tilting mixers have been installed. Four 4-yd. agitating trucks are used for the delivery of all concrete to hoppers at deck level of the several hulls. It is then chuted to stages halfway down the hull side, from which point concrete buggies

carry it to secondary chutes with flexible tube extensions to carry it to the point of placement. In pouring the keelson and deck girders, with their heavy concentration of reinforcing bars, all concrete for the lower section is poured into the side of the form near the center of the beam, where no steel is carried. After the level of concrete reaches that point, the opening in the form is closed and the remainder is worked through the interstices of the upper steel.

The concrete is placed in the separate pours, each of which is continuous until completed. The first cludes the bottom slab and bilges as shell to a height of 8 ft. 2 in. To second pour completes the she frames and bulkheads to below at deck level, while the third pour completes the girders, deck and misselaneous items of the superstructure.

Electric vibrators of a small enoug diameter to pass between reinforcin bars are used constantly by all pour ing crews. This has contributed in large measure to the excellent type of poured concrete that is being of tained.

Launching

When the hull is ready to be floated the side forms are moved back the end forms lifted out, and the valves in the caisson gate opened to flood the construction basin. The caisson is then dewatered and floated to one side, the hull floats off the permanent bottom form and is tower out of the construction basin an inudged into the inspection and painting basin. When pronounced ready she is again floated and taken to the outfitting pier, where she is outfitted

Each barge has a house on the poop wherein are fitted quarters for a crew, complete with galley, mess room, baths and all necessary sand tary arrangements. Forward the tow rope is attached by a large round bol lard built solidly into the hull structure just aft of the stem. The tow rope runs out from this bollar through a roller chock in the stem.

Just aft of the towrope bollard a the electric drive anchor windlass fitted with Naco anchor chain. A Fairbanks-Morse generating set provides power for this windlass and for



Butt welding the longitudinal reinforcing bars to form a 350-foot continuous bar.

e pumps and lights on the forward ortion of the barge

Att there is a pair of Fairbanks lorse generating sets which provide mer for steering gear, a warping ad anchor winch, pumps, ventilation and lights

At the Belair yard, William Lawm is project manager, George Meeever is general superintendent, and red Crocker is project engineer, all m Barrett and Hilp. Raymond C inderson is resident engineer for the S. Maritime Commission

Names of minerals will be used to esignate the 26 reinforced concrete arges being built at Belair shipyard.

No. 1 was delivered as Agate, No. as Chromite, Nos. 3 and 4 as Flint and Granite respectively.

The next seven, in order, will be raphite, Gypsum, Mica, Onyx, wartz. Silica and Slate, according to the announcement of the Maritime ommission.

L. N. McMackin, principal hull inpector for the United States Marime Commission, has pronounced the econd reinforced concrete barge

Removing forms from a poured bulkhead and hosing down.

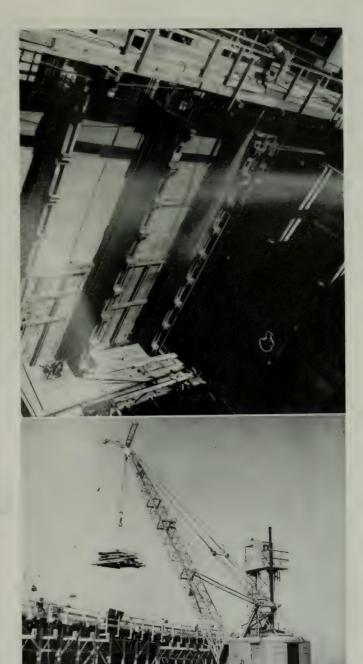
uilt by Barrett and Hilp as "the finst concrete ship ever constructed."

Perfection in concrete is measured a number of man-hours required for moothing and patching rough places fter the forms have been removed.

"The No. 2 barge at the yard, which will be known as Chromite, equired only 180 man-hours for this work as compared with a general verage of 3000 man-hours," according to Mr. McMackin. "This makes he job 99 per cent perfect."

This record of excellence is due to the vigilance of E. B. Hanson, concrete control engineer in charge of the testing laboratory at the yard, lus similar care in handling and placing the concrete, as well as rigid inspection by engineers of both the Maritime Commission and the builders.

Caterpillar crane on slip between basins. Note tower structure to enable operator to spot loads in barge hulls.





A Motable KORT NOZZLE TUG

by E. A Hodge

Principal Dimensions

,
Length O. A98'-3"
Beam24'-0" molded
Beam25'-4" over
guards
Draft12'-0" (aft)
Ihp900
Speed 14.27 mph
Towline pull42,500 pounds
Crew11 men
Displacement370 tons
Gross207.15 tons
Net140 tons

of the Pusey and Jones Corporation, the steel, steam tug Justine was built at Wilmington, Delaware, and has since joined the Silver Fleet as flagship in the hard-pressed service of The Curtis Bay Towing Company in Baltimore. She produced the greatest towline pull of any harbor tug thus far produced by the builders, as well as proving to be the fastest boat in the fleet.

In carefully conducted towing tests

in September, dynamometer recordings were made of varied towrope pull which was synchronized with corresponding towing speeds separately on the tugs H. S. Falk, H. C. Jefferson and the new tug Justine The outcome of these tests in the Delaware River is shown graphically through the curves accompanying this article.

With her 900-ihp engine and her 9-foot-diameter Kort nozzle, the Justine developed a towline pull of 42,500 pounds at zero speed and 14.27

The author is Marine Manager, The Pusey and Jones Corporation.



The streamlined Justine during her trials on the Delaware in September.

statute miles per hour at zero towline pull.

The after hull form, unlike the conventional harbor tug, is broad with a concave area over the nozzle, with lines faired into a cruiser stern. The bottom of the stern frame is further forward than on the conventional tug, and the propeller shaft turns in an outboard bearing. Neither while towing nor running free does the Justine's stern "squat"; in fact, the stern seems to rise slightly as the propeller load increases.

It is interesting to note from the Pull-Speed curves that the nozzle-equipped 600-horsepower Falk could tow the 600-horsepower Jefferson, without a nozzle, backwards at over 6 knots, while the Jefferson's engine is running full power ahead. In like manner, there are some interesting comparisons to be gained from these

curves. The Justine's engine is rated at 900 indicated horsepower and is of the Skinner Unaflow type, each of its two cylinders having a 25-inch bore and a 24-inch stroke, actuated by 175 psi superheated steam at 475-degrees F. total temperature. The steam is generated in a marine type B. & W.

sectional header boiler capable of delivering 16,600 pounds of steam per hour when fired by two Todd wide range variable capacity burners arranged to introduce preheated Bunker "C" fuel oil under pressure. This combination of prime mover and boiler allowed the easy maintenance of 1270 indicated horsepower continuously throughout the towing and free running trials of the tug in early September, which is to say that the sustained overload of 40 per cent will henceforth be commonplace in the routine operation of the tug. At normal power, 900 ihp at 126 rpm, the fuel consumption for all purposes was

(Page 100, please)



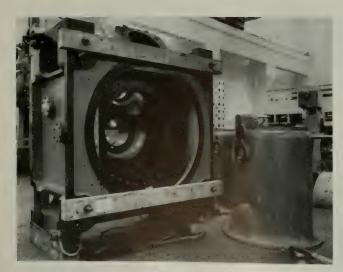
View of the Justine's nozzle, showing hollowed cruiser stern, strut and out-hourd bearing.



General view of the new machine shop taken when the work of rebuilding the clant diesel of one of the largest Swedish liners was being rushed to completion. Note the diesel engine parts, the 35-ton crane and the excellent illumination.

> (All photos courtesy General Engineering and Dry Dock Company.)

New Shop in Full Production



Modern machinery attuned to the times, housed in a building designed and built for the purpose, has increased the scope of ship conversion and repair activities of the General Engineering and Dry Dock Company in San Francisco, under the direction of their chief engineer, Frank Fox.

The new structure, on Battery Street, embraces a rigging loft and a carpenter shop in addition to the machine shop. New equipment throughout the plant guarantees the utmost in mechanical precision, and

Lower cylinder head finished. The faces of the head and liner must form a perfect metal-to-metal fit. After fitting each cylinder is tested at 10,000 psi. he presence of master craftsmen supplies the vital human element. The ombination is a good one.

The range of accomplishments posable is perhaps best illustrated by we boring jobs. One, by Toolmaker 'Slim' Tydeman, was the grinding of a drill to ten thousandths of an nich in diameter, to be used for boring diesel atomizer tips. The other is he boring of diesel cylinder heads and liners on the 120-inch vertical Kung boring mill

King boring mill.

Robert R. Caraway supervises the machine shop. Under his direction the company is now approaching peak production in valves, motors, drive shafts and parts for renewal or repair of diesel or steam reciprocating engines and steam turbines.

Working conditions are facilitated by controlled ventilation and by utilization of a large area of the walls which it will be put. They know just where it will be subjected to chaing or corrosion, what stresses it will have to withstand, and can furnish a close estimate of its life expectancy."

The 145 x 25 foot loft includes an upper deck for manila and a lower for wire rope. A cable reel storage rack holds 30 sizes of cable from ½8 meh to 2½ meh, and a five-ton overhead crane is used for inserting and removing the reels.

There are six rigging vise turntables for unlaying wire, and a table platform which holds 16 sockets at a time for pouring zinc in the process of socketing lines. Included in the equipment is a manually-operated shears, which exerts up to 120,000 pounds pressure.

Ships' furnishings, ranging through lockers, tables, desks, ladders, dish

racks, bunks and sundry other articles, are constructed in the carpenter shop, located alongside the rigging loft.

There, Quarterman Frank Vidmar and his crew virtually revel in the range of workmanship afforded by such machines as table and band saws, joiners, shapers, planers and a boring machine. They claim that they can turn out any type of wooden installation needed aboard ship, and thus far they've backed that boast with results.

This new plant is Geddco's third in San Francisco, all within a two-block area. The company additionally has installed a pipe shop and a sheet-metal shop on Pier 25 on the Embarcadero, where it maintains complete ship outfitting facilities. New construction and drydocking are done at its shipyard in Alameda.

View of the carpenter shop, which adjoins the rigging loft in the new San Francisco plant of General Engineering and Dry Dock Company. The carpenter at the left is operating a table or variety saw. Shapers, planers, bandsaws and other equipment are also visible.

and roof for the admission of daylight. Night operations are conducted under specially-designed twinbeam overhead lamps combining both the fluorescent and Mazda principles, which obviate glare and reduce shadow to a minimum.

Service to the heavy machinery section is furnished by a 35-ton-capacity walking bridge crane. One of its rails flanks the two floors of offices and consultation rooms which rise above the small-lathe section.

The repair, renewal, manufacture and maintenance of running and standing rigging is a specialty with the Geddco loft, under the supervision of Al Platts. His department, immediately adjoining the machine shop, includes 12 men, all of whom are former merchant seamen with from 5 to 30 years of experience afloat.

Mr. Platts speaks of them with pride. "Their knowledge is very important," he says. "They can project their 'feel' for a line beyond the specifications and visualize the use to

Two riggers are splicing a 1/2-inch shroud with the aid of one of the six vise turntables with which this new loft is equipped. Rigger in center is serving a finished splice with marlin, while men at right rear are cutting a line with shears that exert 120,000 pounds pressure. Rope walk and manila loft are on the upper deck.







TRAINING MACHINE

by Dr. Horace Frommelt

A steel "sunflower" at the Westinghouse East Pittsburgh Works being fashioned into a rotor for an electric drive on a Navy ship

HE TRAINING OF man power is the nation's Number One job. This declaration of the National Association of Manufacturers at a recent session is seconded by management everywhere engaged in the production of vital war materials.

Incredible mushrooming of organizations, the depletion of our industrial ranks by the draft, and the substitution of women for men on machine operations, has accentuated this problem of training and multiplied its difficulties a hundredfold.

Another example of the part that women are playing in war production is this Todd Erie Basin Dry Docks' employee engaged in cutting bolts.



The training of operators in the machine tool industry does not differ from that in any other group, unless it be in the urgency and the higher degree of skill demanded. The machine tool industry, on a nation-wide average, has expanded 400 per cent. The corresponding personnel and training problems have multiplied accordingly. In addition, it was necessary in many organizations to convert from a jobbing shop to a mass production layout. This emphasized the necessity of training employees for special operations, and stepped up the corresponding demand for supervision

Over and above the actual increase in the number of operators, the nature of the current crisis and the suddenness of its impact demanded a streamlined training program that would produce results immediately. The old traditional methods of apprenticeship could not, obviously, be applied. It is necessary in the face of the prevailing circumstances, according to which we must operate and produce vital war materials, to take men and women, boys and girls, from the streets and the farms and in a short time train them to reasonable productiveness on our machine tools. With few exceptions, such trainees come to us with no industrial background or experience whatsoever. This is particularly true of women and girl workers.

How can such trainees, both men and women, without previous industrial experience, be brought to a reasonable level of productivity with a minimum of training? Perhaps this question can be answered most satisfactorily by referring to the results of an experimental training program conducted to determine the minimum number of hours of specialized train-

⁽The author is Director of Education, Kearney & Trecker Corporation Milwaukee, Wisconsin. Text is from a paper presented at the Machine Tool Forum, held at Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., on April 7, 1943.)

Unskilled OPERATORS

ng required to train a girl to operate milling machine.

The objectives of this training protram were two, namely, to bring hese women operators to the point where they were no longer machineby and to bring them to that level where they were no longer production labilities. These young women ranged in educational attainments from seventh grade to second-year high school. None of them had had previous industrial experiences; two only from this group of six had worked for an employer as waitresses.

These six young women were employed with the understanding that they submit to forty hours of training and instruction on the operation of the milling machine in a specified vocational school before being assigned to regular production. They were required to pass only a physical examination and to fall within the age range of twenty-one to thirty-five years.

Of the 40 hours of preemployment training, 20 were devoted to demonstration on an actual operation of the milling machine. An instructor was assigned to teach the simple operation of the milling machine; first, its control and adjustment; and second, its operation on simple milling cuts.

The remaining 15 hours were divided approximately as follows: Eight hours were devoted to teaching of milling operations by audio-visual needs; five hours to a review of arithmetic through and including decimals: four hours to measurements and measuring instruments (the scale, inside and outside calipers, and the micrometer); and the remaining three hours to blueprints, their composition, language and interpretation.

At the end of these 40 hours of so-called preemployment training, the women operators were assigned to milling machines set in a production line. They were able to operate this equipment without standby instruc-

Polishing the journal of a 13-foot-high rotor, part of a specially-designed 6600-hp tanker motor being built by Westinghouse.





"Tell your friends that Uncle Sam needs more men and women to build more ships to carry more supplies to Yanks chasing Japs" says this graphic tonand-a-half poster, painted by a shipbuilder on a steel plate at California Shipbuilding Corporation.



Welding trainees in a Pacific Coast yard.

tion or supervision. They were not machine shy, they were not production liabilities, and they were able to make a reasonable showing of production.

These operators were then subjected to an upgrading program of training of approximately 100 hours. Six hours per week (two nights of three hours each) for 16 weeks was sufficient to upgrade these operators to the point where they could be considered as skilled operators in specialized milling machine operations.

This procedure for training produced better results more quickly than training an employee for a machine tool operation by assignment to a machine in charge of a regular operator. The trainees were more quickly brought to an acceptable level of productivity in a shorter time by

the 40-hour preemployment and 100 hours of upgrading training as re-terred to previously. The upgrading phase of this training, while conducted at night, after the regular eighthour shift of work, was paid for by the employer. It is apparently necessary, in order to reach a specific goal in the shortest possible time, so to formulate the program of training that the trainees can be held responsible for results, their progress checked at every step, and the entire activity supervised and administered directly by the management in conjunction with educational agencies. Such results cannot be obtained in the shortest possible time unless trainees are being paid at regular rates during their hours of instruction, and so justify close supervision and administration.

In addition, the preemployment and upgrading program, as briefly referred to above, makes possible earmarking potential supervisory personnel such as lead men or women, setup men or women, foremen, supervisors and others. If the program is closely administered, as it can be under the conditions laid down, evidences of superior ability and application can be quickly observed and recorded. Those justifying additional training can thus be intelligently chosen, resulting in a minimum of misapplied and misdirected effort.

Supervision today is unquestionably one of managements' most difficult and imperative problems. With the mushrooming of organizations,

the need for supervision is increase out of all proportion to the actual potential supply. Some effective means to meet this tremendously in creased demand for supervision mus be formulated. This is being done is two ways. Supervisory personnel i being trained in the manner indicates above, which will be detailed further in remarks that follow. Second, su pervisory personnel is being drawn from among the graduates of the tra ditional three- and four-year apprentice training programs. Where man agement has been sufficiently fore sighted in the past to carry on this form of training, it is now possible to draw on this reservoir for such personnel. In fact, frequently apprentices prior to graduation, and in the last stages of their training, are being used for supervision. While this would have been considered unorthodox prior to this critical era, it is now welcomed as a solution to this particularly urgent problem,

Where supervision cannot be chosen from among apprentice-trained personnel, additional upgrading beyond that as required for the skilled operator on specialized jobs is necessary. This takes the form of additional instruction in shop mathematics, and specifically along the lines of speeds, feeds, chip load and other factors. Above all, such upgrading must emphasize the necessity for special facility and ingenuity in making setups, keeping machines in operation, selection, and the grind-

ing and care of cutters.

Over and above instructions in trade technique, it is obviously necessary to impart as much information as restrictions of time will permit regarding the human relations problem so important in all supervisory activities. This includes instruction in job instructor training (J.I.T.), or the ability to impart information and knowledge by the supervisor or foreman to the operator. J.I.T. is particularly suited for this purpose, and if used properly and judiciously will assist in making the supervisor proficient, in the fundamentals at least, of properly instructing the operator.

A continuous and high-pressure program of the training of such supervisors in the human relations and



Blue print reading is given a prominent place in the Colship training program. Classes are open to men and women. The class shown in this photograph is instructed by Homer B. Huntoon, fourth from the left in the back row. Mr. Huntoon was head of the Department of Architecture at North Dakota State College before the war.

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phases of foremanship is imperative. The conference method, in addition to classroom instruction, is best suited to bring those recently elevated to the supervisory plane to some degree of proficiency in the human relations phase.

As indicated previously, visual material can be used effectively for the training of operators either before or at the time of induction, and later for upgrading. The temptation, however, to use visual material as an end in itself is so great and so frequently succumbed to that it is necessary to issue some warnings, based upon experience, regarding its use.

Visual material is only an aid, and therefore must be used as such. A well-conducted discussion period must follow the presentation of any and all visual aid instructional material. This is true whether such presentation takes the form of a movie or a still picture. Unless apt and pointed questions are directed to the trainees immediately following a presentation, no training or instruction takes place.

For this reason, the visual aid material used is accompanied by an instruction book to be used by the class supervisor. This manual contains questions and answers that can be used by the nonexpert in, for example, milling machine practice, in conducting this discussion period. Several questions and answers for each and every one of the slides or frames composing the course are contained in this manual. These questions are typical of the questions asked by actual trainees, and as such can be relied upon as being live and stimulating material in the hands of an intelligent instructor.

Every possible support must be given to such visual aid material. Hence an instruction booklet entitled "Right and Wrong in Milling Practice" is placed in the hands of the trainee for use during the discussion period. The material in this booklet, gathered together under seven chapter headings, is coordinated with the material as presented visually on the



Instructor Robert Keane with his class, which is open to foremen and leadmen, who are instructed in the handling of men and the various ramifications of doing a job quickly, safely and conscientiously. More than 2000 men have gone through this class of Calship.

screen. The instructor can, therefore, request trainees during the discussion period to turn to a particular page and illustration which amplifies the material being shown on the screen.

Without such supplementary and supporting instructional aids and materials a visual training course is useless. Its teaching results are nil and the time spent must be written off solely as having entertainment or relaxation value but not as productive of instruction and training.

The audio-visual course is composed of five sections or divisions: The first is devoted to an introduction to the milling machine cutters, arbors and attachments; the second, to the simple rules necessarily followed to perform an acceptable operation on the milling machine; sections three, four and five are devoted to a presentation of 25 milling operations each, or 75 total. These visual presentations of actual milling operations are used solely to illustrate the rules laid down in training session Number Two.

It will be noted here that no attempt is made by means of this audiovisual course to teach the "How" or the step-by-step method of performing a milling operation. Rather, it is designed to teach the "Why" of milling. It is felt that the "How" can

best be taught on the job by the instructor in the shop or school. The rules or principles, namely the "Why," can be presented in the classroom in conjunction with the actual instructions that must take place on the milling machine itself.

This material is being used for the instruction of milling machine operators and supervisory personnel, such as lead and setup men, in our machine tool manufacturing organization. Material provided by manufacturers of lathes, turret lathes, grinders and other machine tools is similarly used. Where the necessary discussion material is lacking, it is necessary to prepare for use by the instructor immediately following the showing of a movie or a series of slides. As indicated previously, no visual material, however valuable in itself, unless accompanied by an animated and pointed discussion, will produce results in the form of skilled and productive operators of machine tools.

This program, with the necessary modifications to adapt it to the peculiarities of a particular organization, will, in our opinion, produce the necessary skill and productivity as demanded by the present crisis, out of which we are determined to arise with our American way of industrial life safe and secure.



Best Cure for Early Quitting

This article is the first prizewinning letter in a contest on this subject held by Marinship Corporation, Sausalito, California, which brought out 516 letters and 649 suggestions. The author, James P. Myers, was born in Yoakum, Texas, and in 1907 landed in San Francisco, where he graduated from Mission High and was on his way to a premedical course at U.C., but became a salesman of movies for Paramount, Republic and Universal. At Marinship, Mr. Myers is a shipfitter.

Regarding the problem of early quitting and stalling, let the management first of all make a clear statement of what is wanted from each employee. Presumably it wants each one of us to work from "whistle to whistle" on whatever shift we are working.

On that presumption conditions should be so arranged that everyone would put in full time right on the job, and this would especially include the welders, burners, and chippers. In most instances a job cannot be carried on without the help of at least one of these three crafts at any one time and, under existing practice, they are rolling up their lines or turning in tools at least 15 minutes before quitting time at the end of each shift. This means the loss of that amount of time for everyone else connected with the jobs on which they have been working. Arrangement should be made for someone in each work area to see that these tools and lines are taken care of from shift to shift so that they could be passed on from one shift to the next right on the job without the necessity of all the duplicate handling of equipment on each shift. That would help the old wattmeter to jump back up a bit faster,

The problem is one that is to be solved primarily by the positive supervision of the foremen and leadermen in seeing that the definite rules of management are carried out. Frankly, the thing to my mind is so basically simple that it is hardly necessary to pay out a thousand dollars—although you can rest assured any part of the thousand will be wel-

Winners in a contest staged by Marinship Corporation, Sausalito shippyand, to discover the best cure for early quitting, Shipfitter James Myers and Burner Trainee Marie May Hansen are congratulated by K. K. Bechtel, Marinship president. Mr. Myers won a \$500 war bond for suggesting an overlappling shift which would permit transfer of tools on-the-job, while Miss Hansen won a \$300 hond.

comed by any of us. By the word "simple" I mean just this: if you are a leaderman over possibly a half dozen men, and management, through your foreman, tells you that those men are to be on the job "from whistle to whistle," then I can only say there would be something wrong with you as a leaderman if you did not see that the orders of your foreman were carried out. That's why you would be out of the leaderman's job in a heck of a hurry unless-(And note that "unless" as I'll mention it again, in a sentence or two). Now, if any one foreman should be having undue trouble in his particular section in getting those orders from management carried out, he, too, would be out of his job in a heck of a hurry unless —! That brings me to the mention of that word "unless" again, and I mean that these changes in leaderman and foreman would be made on the face of their failure to produce unless politics should enter the picture. If the situation in each instance is not going to be handled on the merits of the case, and if everyone is not going to be handled just the same right down the line, then I say you had better drop the whole thing right

If a leaderman is given definite instructions that his men are to be on the job until quitting time at the end of the shift and the cards are not to be given out until the whistle blows at the end of the shift, then let the foremen and the supervisors see that their leadermen absolutely live up to that rule. If somebody in the next area is giving out cards a minute or two ahead of time and getting away with it, then he's the worm that spoils the apple because when one does it then it is the old story of the other fellows wanting the same treatment. So, the leaderman must definitely live up to all instructions.

I cannot help but know from my own associations around the yard that there should be only a small percentage of the employees that will not readily pitch in and live up to a fair set of rules if they are definitely esablished as the code for everyone in he vird without exception. For those en who are unwilling to "play ball" t would be possible to get some kind of system to discipline them by a method of "suspension" through get ing the possible cooperation of the Yar Manpower Commission and the intens directly involved. An em slovee would then be able to work only at Marinship and would not be able to take advantage of a quit slip o go to work elsewhere.

Regarding early quitting at lunch ime, that, again, is a duty of the eaderman to see that work goes on intil the whistle blows. In order to combat the complaint of some employees that they are unable to get served at the canteens unless they get there very early at lunch, I would suggest the further installations of canteens in those areas where the business at present indicates that it would be a great convenience and time-saver for the employees. If such additional canteens are installed, their location should be subject of thorough study so that they would be sure to do the most good for the greatest number; as for instance some kind of set-up might be made at a couple of extra spots along the Ways and Outfitting Docks. There is, also, the angle of encouraging employees to buy their lunches when they come on shift instead of waiting until the lunch period, and this would work out for those who did not want soup. It might be worth while to offer some incentive to those who would buy their lunch coming on shift.

Regarding stalling, I cannot be too emphatic in tossing this complaint right smack into the lap of the leaderman and then jumping right on top of it. What a ridiculous thing to think that management would see fit to put a man in a position of supervising only a small handful of employees, and then have this same management crying about the problem of stalling. In Heaven's name, can't the collective boots of the leadermen and foremen in our yard solve the problem of stalling in one quick, decisive campaign of putting the toe where it will do the most good! Figurative, of course, but, my God, I still mean it. There are only two reasons for this problem, and they are either poor supervision or too many workers on a given job. One thought on this subject is that there may be times when what is apparently stalling is simply a lack of work at hand. This will have to be tossed into the lap of management, and I can jump right in there, too Sometimes I have seen not only my own department but others where we have not had one single job on hand to do and with a half dozen or more of us all standing around doing it Certainly, anyone coming around about that time would have been well impressed with the fact that we were a bunch of stallers, whereas we were all moan ing that we wanted something to do and we were saying plenty about management not having things set up so that there would be a continuous flow of work for us at all times.

In closing, I would like to say that I believe our two present evils of early quitting and stalling are caused for the most part by a lack of interest on the part of those employees who are habitually guilty of these two offenses. In turn, I believe management has helped create this lack of interest by not making itself more often seen and heard.

15,000th Sperry Gyro Certificate Awarded

Company officials, guests from the armed forces, and over 200 officers and men representing six of the United Nations, who had completed courses in Sperry Gyroscope Company's Marine Navigational Instrument School, witnessed the presentation of Sperry's 15,000th Gyro Certificate to Lt Charles Perez of the U.S. Merchant Marine at a graduation dinner in Brooklyn on Sep-

The diploma, honored by men who follow the sea the world over, was presented by O. B. Whitaker, Federal and Marine sales manager for Sperry.

The first class organized for the purpose of studying a Sperry instrument met in December, 1914, with three pupils and Mr. Whitaker as instructor. The teaching job had been assigned because the young engineer, but recently returned from duty in Europe, had talked, as he puts it to-"out of turn" about the necessity for training men in the use of the formidably complicated Sperry gyro-compass, if customers were ever going to be persuaded to buy it.

Today, with the young engineer "who talked out of turn," and John J. Brierly, in charge for the past 19 years, the list of alumni contains names of 15,000 men of all nationali-

Lieutenant Perez, to whom chance brought the distinction of being the 15,000th man to qualify for the coveted certificate, is 41 years old. He is a nephew of Dr. Juan B. Sacasa, former president of Nicaragua, and was wounded at Pearl Lagoon during the Sandino-Moncada affair.

O. B. Whitaker (right), Federal and Marine Sales manager of Sperry Gyroscope Company, presents the 15,000th diploma of Sperry's Marine Navigation Instruments School to Lt. Charles Perez of the U. S. Merchant Marine. J. J. Brierly, director of the school, looks on. (Photo courtesy Sperry Gyroscope Co., Inc.)





Steady as you go! NHOWLEGGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome St., San Francisco, California

NEW SPECIMEN EXAMINATIONS FOR LICENSED OFFICERS

(Continued from October)

- (16) In inland waters, you are meeting another vessel which is on your port bow and crossing your course so as to involve risk of collision. You blow a passing signal of one blast and the other vessel answers with two blasts. What action would you take?
- (17) Are naval vessels required to carry lights as prescribed in rules of the road in peacetimes? Can they carry other lights?
- (18) State the "Prudential" or "Precaution" rules, and explain their meanings.
- (19) You are proceeding full speed ahead in a steam vessel on a dark night, with the wind aft, and you see a red light and a green light ahead. What would you do, and why?
- (20) In inland waters, you are steering west by south when you pick up the headlight and green sidelight of another steamer bearing southwest. A few minutes later you take another bearing and find that it still bears southwest. What will happen if each holds his course, and what is the duty of each?

Time allowed-3 hours.

Subject: SEAMANSHIP

- (1) What is a double luff tackle?
- (2) What sized block is required for a hemp or manila rope?

- (3) What is the difference between gross and net tonnage?
- (4) As third mate you are on watch. Temperature below freezing. What precautions would you take with steam deck winches and windless?
- (5) For what reason are the 5and 7-fathom marks on a hand lead line cotton and wool respectively?
- (6) What kind of sail is a lifeboat equipped with, and how would you set it?
- (7) How would you land a life-boat through a heavy surf?
- (8) How are the shackles on an anchor chain marked?
- (9) What precaution would you use in anchoring in deep water—say 15 fathoms or more?
- (10) A man falls overboard. What would you do?

Time allowed-2 hours.

Subject: SEA TERMS AND DEFINITIONS

- (1) What is the meaning of the following terms, as applied to sailing vessels?:
- (a) To keep her away or drop her off.
- (b) Sailing, bearing, or working to windward.
 - (c) Lying to.
 - (2) What is a tom?

- (3) What is meant by "ranging the chain"? What is meant by the "bitter end" of an anchor chain?
- (4) What is meant by dropping and dredging with the tide?
- (5) What is meant by "riding a
- (6) What is a rhumb line?
- (7) Define meridional parts.
- (8) What are the tropics?
- (9) What is meant by "zone description"? How is, it used?
- (10) When crossing the 180° meridian on a westerly course, what change takes place in date and time?

Time allowed—1½ hours

Subject: STOWAGE

- (1) What examination would you make of a vessel's hold prior to loading cargo?
- (2) Give five common causes of damage to cargo.
- (3) How would you report on a damaged cargo?
- (4) Upon being assigned to No. 1 hold while loading general cargo, what would your duties include?
- (5) How should ventilators be trimmed?
- (6) What is dunnage? What purpose does it serve?
- (7) How would you stow casks, cases and bales?(8) How should carboys contain-
- ing acids be stowed?
 (9) How should cylinders beautiful cylinders beautiful cylinders.
- stowed?

 (10) As applied to bulk oil car-
- goes, what is meant by:

 (a) Ullage.
 - (b) Innage.
 - (c) Thiefage.

Time allowed-2 hours.

Subject: SIGNALS

- (1) Name the order in which several hoists should be read when displayed simultaneously.
- (2) How would you ascertain the nationality of a vessel from her signal flags or call letters?
- (3) A vessel is flying your signal letters; what would you do?
- (4) After opening communication with you by International Code flags, a vessel's first hoist is her answering pennant over the E flag. What would that indicate to you?
- (5) You cannot distinguish the signal made by another ship, or can-

- of decode it intelligibly What
- (6) How would you signal to nother ship by International Code ags?
- (*) In signaling by International ode flags, what is indicated when ach of the following flags is hoisted to the top of a numeral group:
- (a) T (b) P. (c) X.
- (8) Indicate the Code flag hoists on would use to signal the following message: "My position by observation is (LEX) latitude 40° N. and longitude 55 35′ W."
- (9) What is signified by a vessel which flies the International code lag "Q" singly, on arrival in port?
- (10) What is the night signal to be exhibited by a vessel upon arrival in port, signifying: "I have not reerved free pratique"?
- (11) How would you call a vesel in signaling by blinker light?
- (12) After opening communicaion with you by blinker, a vessel ends "PRB." What would this inlicate to you?
- (13) If you missed part of a message being sent by blinker light, how would you send "Repeat all after"?
- (14) How does a man-of-war indicate that she wishes to communicate, by tain that a position you sent had been received correctly?
- (15) What does . . — — signify when sent
- during a communication by blinker?

 (16) How would you indicate that you wished to communicate by semaphore with a ship close by?
- (17) How does a man of war indicate that she wishes to communicate, by semaphore, with a merchant wessel?
- (18) How are numbers sent in signaling by semaphore?
- (19) If you were signaling by semaphore, how would you know whether the other ship was receiving your message?
- (20) What are the recognized day and night distress signals for vessels?
- (21) Describe day and night southeast storm warning signals.
- (22) Describe the day and night hurricane, or whole gale, warning.
- (23) What is the Coast Guard lifesaving signal for "Haul Away"?

- (24) Your ship is ashore in a storm, and you are preparing to launch your boats to abandon ship when you see the following signal: A man on shore beckoning by day, or two torches burning near together by meht. What would it mean?
- (25) You see a red smoke signal on the surface nearby, what would you do?

Time allowed 3 hours.

Subject: RULES AND REGULA-LATIONS

- (1) What is the additional equipment required in a motor lifeboat of an ocean-going passenger vessel?
- (2) You are detailed to look after the equipment in the port lifeboats. What would your duties consist of?
- (3) How long shall the motor- or hand operated propeller gear be operated, and how often?
- (4) How is fire hose tested, how often, and by whom?
- (5) Describe the steam smothering system for extinguishing fire in cargo holds and paint and lamp lockers.
- (6) How many extra charges are required to be carried for portable fire extinguishers?
- (7) Name three types of fire-detecting systems.
- (8) Describe the signaling lamp required on vessels. Where is it located, and how operated?
- (9) What vessels are required to carry oxygen breathing apparatus, gas masks and flame safety lamps, and how many are required?
- (10) When, where and how should the license of officers be posted on a vessel?

Time allowed-2 hours.

Subject: GENERAL

- (1) What do you consider your duties as third mate?
- (2) If, while on watch, there is any occurrence out of the ordinary, what would you immediately do?
- (3) Being on watch under way and having a pilot on the bridge with you, what do you consider your duty to be in reference to the navigation of the vessel?
- (4) What gear would you test, and what entries must be made in

the vessel's log book before casting off from the dock?

- (5) How frequently should compass errors be determined, weather permitting?
- (6) As a watch officer, have you the privilege of stopping your vessel in any unusual situation?
- (7) Running coastwise and seeing a fog coming on, what would you do?
- (8) Upon coming to anchor, what should be done in order to determine the vessel's position? What information is noted, and where? Would you "ring off" the engines before the vessel's position had been determined?
- (9) What are the signals to be made by a vessel seeking the service of a pilot?
- (10) Describe an emergency drill conducted on a passenger vessel, giving the signals used. Give full details in regard to your duties as third officer.
- (11) Explain how you would check the course being steered, using the azimuth circle and the sun.
- (12) State the only manner in which steering orders may be given.
- (13) Explain how you would properly use the signaling mirror to attract a passing airplane, if you were adrift on a life raft.
- (14) What precautions should be taken regarding open hatches when cargo is not being worked from the holds?
- (15) What is the following ship's paper?: Articles of Agreement.
- (16) On tank ships, what should be done with the sea valve wheels when loading?
- (17) What signal should be displayed by night when loading or discharging bulk oil at a dock?
- (18) Describe the adjustment and use of an approved oxygen breathing apparatus. What is the length of time it is serviceable? How do you ascertain the amount of oxygen there is in the cylinder?
- (19) How would you get the flame safety lamp ready for a test?
- (20) How would you revive a person who has been rendered unconscious by fumigation gas, by electric shock, drowning, or any other cause, whose breathing has ceased or become very shallow?

Time allowed—3 hours.



by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

XI-MAIN GOVERNOR

Emergency Governor and Tripping Device, Fig. 12 525 Kw Sets

The turbine is equipped with a speed-limiting device which will act to stop the turbine in case it overspeeds as the result of failure of the main governor to operate. This device is an emergency governor that functions independently of the main governor.

The emergency governor is of the plunger type, and is located at the outboard end of the turbine shaft. If the turbine overspeeds because of failure of the main governor to operate, the emergency governor actuates the emergency tripping device, which trips the throttle valve to close.

During normal operation, the centrifugal force of the plunger (2), Fig. 12, is counteracted by the force of the compressed spring (4). However, when the turbine speed increases 12 per cent above normal, the centrifugal effort overcomes the force of the spring, and the plunger (2), Fig. 12, moves out and strikes the trigger (17), Fig. 13, moving it and unlatching the trip rod (18), Fig. 13, so that it is pushed downward by the spring (6). This action swings the bell crank (1) to the right and actuates the tripping device.

Adjustment for Clearance

The stroke of the plunger (2), Fig. 12, is 7/32 inches. The clearance between the plunger and the trigger when the turbine is at rest and the trigger latched in position is 1/32 in. To measure this clearance, remove the cover, Fig. 1, and insert a sheet metal gage. The adjustment

of the clearance is made by shifting the bracket (5), Fig. 13. In the process of manufacture, the clearance is fixed and the bracket (5) is retained in position by dowels.

Adjustment of Tripping Speed

The plunger is contained in a transverse opening in the body (1), Fig. 12, that contains all the parts of the governor. These parts are held in position by means of the plug (6), which fixes the position of the plunger at speeds below the trip speed. The speed at which the plunger acts is with limits, adjusted by turning the bushing (3) which

Body Plunger

Spring Lock screw fixes the loading of the spring (4) Turn clockwise to raise trip speed counterclockwise to lower. Chec speed three times or more, the stake the bushing (3) to the body to prevent accidental change in adjust ment.

A reliable tachometer must be used for measuring the speed of the turbine when adjustment of the emergency governor is to be made.

The trip speed is tested at the factory and should not be changed unless absolutely necessary. The trip speed is stamped on the governohub (1), Fig. 12.

Care of Emergency Device

Inspect, clean and test the emer gency governor at frequent interval to be sure that it is in operative con dition and to guard against possible deterioration or variation of the adjustment. Most of the accidents to turbines have resulted from the long disuse of the safety devices.

In case the emergency governodoes not trip at the proper speed make no adjustments to any part of the mechanism until the trouble has been located.

Do not keep the turbine in service unless it is known that the emergency devices are in an operative condition.

Tripping by Hand

To operate the tripping mechanism by hand, press upon the button (7), Fig. 13. This unlatches the trigger (17) and allows the trip rod to de-

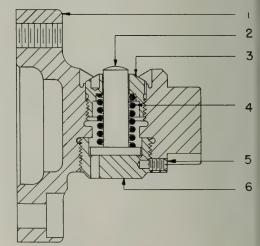


Fig. 12. Emergency Governor (525-kw Set)

seend and cause the throttle valve to close in the manner described

Resetting

To reset the mechanism after it has tripped the valve closed, proceed as follows:

(1) Turn the handwheel of the throttle valve in the valve closing direction. This will lower the nut of the valve spindle and allow the latch of the spindle to engage the trip hook.

(2) Move the resetting handle (1), Fig. 13, to the left as far as it will go and then return it slowly to the latched position. This will return the trigger (17) to its position and latch the trip rod (18) in the reset position.

(3) The emergency device and the valve are now in the latched position, and steam may be admitted to the turbine by opening the throttle valve by turning the handwheel in the valve-opening direction.

(4) When the throttle valve is fully open, the spindle should not remain forced against the stop by the handwheel. After opening the valve wide, always turn the handwheel a half turn in the closing direction.

Shaft Bearing, Fig. 14

The journal bearing is of the ball seat self-aligning type, and consists of a cast-iron shell lined with babbitt, which is securely anchored to the shells by axial and circumferential dovetail grooves.

The bearing lining is split horizontally to facilitate assembly and disassembly. It is clamped firmly together in its seat by the bearing cap. The two halves of the lining are doweled in the joint surfaces to prevent displacement. The complete lining is interchangeable, but separate halves are not. The lining is held in position by means of a lining screw which locks the upper half to the bearing cap.

Lubrication

The pressure of the oil into the bearing is 10-lb, gage. Too great an oil pressure is apt to cause flooding with oil throwing at the ends of the bearing. The turbine will operate with an oil temperature as high as 170 to 175 deg. F. provided a good grade of oil is used.

Oil is fed into the lining at the horizontal on the upcoming side of the journal, through a groove which spreads it over the journal. The pumping action of the rotating shaft carries the oil with it through the groove in the upper half lining; and

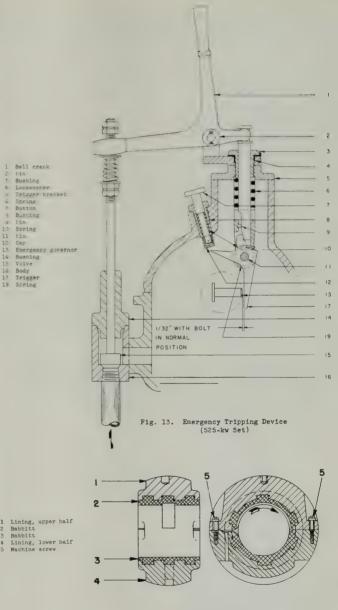


Fig. 14. Turbine Bearing (525-kw Set)

the cool incoming oil wipes the journal and absorbs heat from it. Most of the oil is immediately discharged from the lining and returned to the tank. A portion of it is carried down between the journal and the lower half lining by the rotation of the shaft. It forms the lubricating film, and is discharged at the ends of the lining.

Pacific Coast

Marine Activities

by Special Correspondents



Fishing Vessels For Northwest

Construction of 68 vessels to augment the fishing fleets of Washington and Oregon has been authorized by Fisheries Coordinator Harold L. Ickes, the United States Fish & Wildlife Service in Seattle was notified on October 9. The vessels include 29 purse seiners, five trawlers, 11 trollers, three halibut schooners, 12 sea skiffs and eight miscellaneous vessels. Forty-four of the vessels are to be completed this year and 24 in 1944.

California is authorized to build 55 fabring vessels, including one dragger, 25 purse seiners, two trawlers, one troller, six sea skiffs, and 20 miscellaneous craft, including 14 tuna clippers. Twenty-four of the vessels are to be completed this year and 31 in 1944.

Materials for the vessels were included in the amount allocated under the Controlled Materials Plan of the

BRINGS HOME BIG CATCH
With a \$17,300 catch of soupfin shark made
in 19 days off the Washington Coast by her
six-man crew, the fishing vessel Princess
arrived in Seattle late in September. The
Princess landed 3000 pounds of shark livers,
rich in vitamins, worth \$5.10 a pound, and
1,600 pounds of shark carcasses, valued at
17/4 cents a pound. More than \$1500 was
paid to each member of the crew for the
19-day cruise.

War Production Board to the War Food Administration, and were released for the construction of individual vessels on recomendation of the coordinator of fisheries.

Tuna Differential

The 2-cent-a-pound differential on tuna sold to the fresh and frozen fish markets, which caused an unusual quantity of tuna to be landed in Seattle, was removed on October 15 as a means of ending diversion of the fish from the canneries. The differential will remain in effect on California

transactions, Wytze Gorter, district OPA price officer in Seattle, said. In one week 50 tuna fishing vessels were attracted to Seattle by the higher prices. Approximately 700,000 pounds of tuna had been landed in Seattle during the season to October 13, the United States Fish & Wildlife Service reported.

Shipyard Moves

Barbee Plant No. 2, which was moved from Bryn Mawr across Lake Washington to Kennydale, a distance of five miles, is in full operation on the new site. The new plant, which employs 400 workers, including 30 women, celebrated on October 17 by launching its first vessel, a huge barge for the Army.

Several barges and tugs for the Army are under construction at the Barbee Kennydale plant. Other contracts from the Army are held by the Barbee Company. The barges will be completed at the Kennydale plant while the tugs will be moved to the Ballard yard for completion and the installation of machinery and other equipment.

Wheat Cargo "Topper"

Captain Dinty Moore, master of the barge Island Forrester, was wearing a new hat when the vessel arrived in Seattle recently from Vancouver, B. C., with a full cargo of 4000 tons of bulk wheat. Following a custom dating back to the days of sailing ships, the port authorities of Vancouver each year present a new "topper" to the master of the first vessel of the season to take a full wheat cargo from the British Columbia port. Captain Moore won the hat and was wearing it when his vessel towed into a berth at the Hanford Street Terminal of the Seattle Port Commission

Island Forrester, owned by the Island Tug & Barge Company of Vancouver, is expected to make eight

trips, delivering a total of \$2,000 tons of wheat in Scattle, according to A G Toughy, Scattle manager for Kerr, Gifford & Co, who operate the Hanford Street grain elevator in Scattle under lease.

A New Construction Program

Of prime interest to the Southern California boat yards and to the fish ing vessel owners was the recent decision of Harold L. Tekes, fisheries coordinator among his numerous other titles, to permit the construction of 55 tuna clippers during the next two years. This comes at a most opportune time, as the announcement ar rives when the yards are winding up their heavy program of wooden boat construction for the Navy. It is also very welcome news to the canneries, is the many wooden vessels taken over by the Navy at the start of the war are reported to have brought in about 70 per cent of the tuna catch coming into California ports.

Up to the present writing, the Lynch Shipbuilding Company at San Diego has contracts to build four clippers of a length of about 106 feet, to cost approximately \$150,000 each, and following a standard design, which will be laid down immediatly.

The Kettenburg Boat Works, also of San Diego, has commitments to build seven jig and seine boats ranging in length from 32 to 40 feet and costing between \$6000 and \$10,000. This yard has just finished a large contract for small wooden naval craft. With no new naval work in prospect, it was faced with the problem of disposing of its highly trained and specialized personnel, which was solved with the timely arrival of permission from Washington to engage in private construction.

This same situation existed more or less in most of the Southern California yards, and now all are busy with plans for building their share of the badly-needed new fishing vessels for private operation. Along with the revival of fishing vessel construction comes the hope that some of the obvious defects of previous tuna vessel design will be overcome and a more seaworthy and practical design evolved. Captain Guy Silva, owner of the clipper Emma R. S. until she was taken over by the Navy, developed the Silva universal coupling to overcome the faults of the long line shaft necessary when the engines are placed far forward, which demonstrated not only its ability to overcome the misdignment troubles but resulted in a saving in fuel and a reduction in fish lost through heating of line shaft bearings Captain Silva has now developed a revolutionary design for a tuna boat, and it is obvious that the design of these vessels should be completely overhauled to place the driving element in the stern. It is admitted that fishing can be just as well accomplished from the waist of the ship on each side, possibly with bulwarks arranged to hinge outwards and down to take the place of the usual fish racks, bait boxes amidships and fish hold from the engine room forward. The time for fishermen, designers and underwriters to get together and evolve a more practical and efficient vessel is now.

Some Northwest Launchings

With Chief Justice George B. Simpson of the Washington State Supreme Court as the principal speaker, and state officials, present, the first of five 157-foot wooden seagoing tugs ordered by the United States Maritime Commission from the Puget Sound Shipbuilding Corporation in Olympia, Washington, was launched October 12. Open-house for the public was held in the shipyard, with the Olympia High School band furnishing the music.

The Puget Sound Shipbuilding Corporation began tugboat construction last March, and the 157-foot vessel was the first to be launched. The company finished a barge contract some time ago. Judge William J. Millard of the Washington State Supreme Court, who works a swing shift at the yard in addition to carrying on his court duties, was one of the speakers. Betty Jean Holland of Olympia was the sponsor.

Days of the Oregon Trail and of pioneers of the Pacific Northwest were recalled on October 16 when a tank steamship that will serve in the war effort was sent down the ways from the Kaiser Swan Island shipyard in Portland, Ore. The vessel was given the name of Oregon Trail.

The sponsor was Miss Valeria Bolton of The Dalles, great-granddaugh-

DESTROYER LAUNCHED

Workmen and Navy men and their wives cheer as the destroyer Ross starts down the ways from the plant of the Seattle-Tacoma Shipbuilding Corporation in Seattle. The sponsor was Mrs. W. J. Malone, wife of Capt. Malone, supervisor of shipbuilding in the Seattle area, who left Seattle recently for a tour of duty on the East Coast.



READY FOR SERVICE

YMS-291, a wooden mine sweeper built at the Lake Union plant of Associated Shipbuilders, completed and ready for service. Many of these little vessels have been built in Puget Sound shipyards.

ter of S. M. Gilmore, a member of the party that blazed the famous trail to the Willamette Valley in 1843.

The Oregon Trail Centennial Commission and the Oregon Council of the American Pioneer Trail Association cooperated in plans for the celebration.

Everett Pacific Company launched another Navy net tender on October 9, with employees of the shipyard in full charge of the ceremony. The vessel was christened the Baretta by Evelyn Joramo, 11 years old, daughter of Emil Joramo of Everett, a shipfitter employed in the plant. It was the first launching at the Everett shipyard entirely supervised by employees.



Mexican Fisheries Developing

Under the aggressive and efficient direction of Gen. Abelardo Rodrigues, ex-President of Mexico, the fisheries of the Gulf of California and Baja California in general are being widely developed. This year more than 90 Mexican boats will operate, and the major part of their catch will be sent to the United States. It is planned to ship 10,000,000 pounds of frozen fresh shrimp to the storage plant of the Marine Products Company at San Diego this season, and the first two carloads have arrived. In addition, 2,500,000 pounds of fresh fish and 500,000 pounds of clam meat will be shipped in.

A new refrigerating plant is being constructed at Guaymas, designed to handle mostly fresh fish and shark livers, which will be completed and in operation early in February of 1944. L. C. Small, president of the Marine Products Company at San Diego, American agents of the Rodrigues interests, advises that all the shrimp delivered at the storage plant will be for civilian consumption and will be distributed among the Eastern, Midwestern and Western markets. The fresh fish and clam meat are sufficient only for the Western markets.

Port Tax Levy

Pierce County, Wash., taxpayers will pay a 4.25-mill levy amounting to \$363,468.62 for the Port of Tacoma next year, according to the port budget, adopted for 1944. Total expenditures will be more than \$800,000, the balance to come from port leases and operating earnings. This is the first time that the Port of Tacoma has made a levy, except for bond redemption, since 1923.

Personals

John Backland and his famous Arctic trading schooner, C. S. Holmes, are both taking part in the war effort. Called to the colors by his commission in the Naval Reserve, he has been promoted from lieutenant to lieutenant commander, according to word received by his mother, Mrs. Ellen M. Backland of Seattle. The C. S. Holmes was taken over by the Army and converted into a barge at the plant of the Winslow Marine Railway & Shipbuilding Company.

Philip Ketchum of San Francisco, regional director of the United Seamen's Service, has been spending considerable time in Seattle inspecting U. S. S. facilities. He says Pacific Coast ports are going to face increased problems as the war is stepped up in the Pacific.

Kenneth W. Gilmore, former traffic manager of the Girdwood Shipping Company, but now with the Army Transport Service, has been promoted to major, his friends in Seattle have learned. He became assistant traffic manager of Associated Shipbuilders in Seattle shortly after Pearl Harbor. For six months he worked in the shipyard and then joined the A. T. S. at the Seattle Port of Embarkation, and was promoted to captain on September 6, 1942.

W. E. Springstun, veteran of the Seattle waterfront, is in the uniform of a captain of the Army Transport Service. The tall silver-haired shipping man, who had many thrilling experiences in Alaska waters, is assistant marine superintendent of the Seattle Port of Embarkation. He was an employee of the East Waterway Dock & Warehouse Company in prewar days, and each noon called at the marine department of the Seattle Merchants Exchange, where shipping men received vessel movement reports and often exchanged stories of experiences of other days.

Lieut. William R. Strickland, formerly general freight agent of the shipping firm of Sudden & Christenson, Inc., in Seattle, has been appointed port storage officer at the Los Angeles Port of Embarkation. He has been assistant transportation officer at the Army Holding and Reconsignment Point at Pasco, Wash. He was in Seattle recently looking up old friends.

H. C. Hanson, consulting naval architect, who has held many conferences in the East concerning the shipbuilding industry of the Pacific Northwest, left late in October on his 22nd airplane trip to New York and Washington. During his previous trips he has traveled 141,000 miles by air. As the guest of the Wheeler Shipyards, he recently made trialtrip cruises in Navy rescue tugs on Long Island Sound. A number of these vessels are building on the Pacific Coast.

Lieut. Col. Kenneth D. MacKenzie, formerly assistant general passenger agent of the Alaska Steamship Company, has been given the award of the Legion of Merit for exceptionally meritorious conduct during the invasion of Sicily, according to word received in Seattle. Colonel McKenzie is now with the Transportation Corps, Headquarters Services of Supply, North African theater of operations.

Frank Pender, Port of Vancouver, Wash., auditor, has been appointed port manager, succeeding Thomas P. Macomber, killed in an automobile accident. Tilton Randail is the new port auditor.

Leroy E. Kuhns, United States shipping commissioner in Seattle, is in the uniform of a lieutenant commander of the Coast Guard. The shipping commissioner's office, a branch of the Bureau of Marine Inspection and Navigation, was taken over by the Coast Guard on March 1, 1942.

Fireman's Fund Elects Officers

At a meeting of the company's board of directors held in San Francisco on October 14, Charles C. Hannah was elected president of the Fireman's Fund Insurance Company. Charles R. Page, president since February, 1937, retired in accordance with the company's retirement plan, and was named chairman of the board of directors, succeeding J. B. Levison, who at his own request retired, retaining membership on the board of directors.

Similar action by the directors of the affiliated companies will make Mr. Hannah president and Mr. Page chairman of the remaining companies of the group—Fireman's Fund Indemnity Company, Home Fire & Marine Insurance Company, Western National Insurance Company and Western National Indemnity Company.

James F. Crafts, second vice president of the three insurance companies, stationed at Eastern department headquarters in Boston, has been elected first vice president of Fireman's Fund Insurance Company,

ome Fire & Marine Insurance Comny and Western National Insurce Company

Richard V. Goodwin, second vice essel at in charge of indemnity series as New York Cary head narters, was elected first vice president of Fireman's Fund Indemnity impany and Western National Infinity Company.

The heation of the two first vice residents in the East recognizes the towth and importance of the East in operations of the group and the quirements of increasingly active articipation in the affairs of nationide underwriting organizations, any of which are located in New ork.

pecial Mill Representative

D. Earl McElroy has been appoint. I Special Mill Representative on the acific Coast for Lukens Steel Commy and its subsidiaries. By Prodets Steel Corporation and Lukeneld, Inc., Coatesville, Pa., according an announcement by J. Frederic Viese, vice president of Lukens in harge of Combined Sales of the nree companies.

In his position as Special Mill Repesentative, Mr. McElroy will act in liaison capacity between the Lukens ompanies and C. T. Hansen & Comany, Pacific Coast sales representative of Lukens and its subsidiaries.

D. EARL McELROY

New Export Firm

To assist American business in for eign trade development, the new importing and exporting company of Herman Yaras has been recently formed in Los Angeles, and will occupy itself primarily with the development of distribution contacts in the Central and South American countries, as well as the Far East.

Herman Yaras, formerly president of the Marsman Trading Corporation in the Philippines, has already developed excellent connections in Mexico, and expects shortly to announce additional tie ins in the South American market. Trade arrangements have been completed with the firm Mexargo, Mexico City, which is Mexico's largest trading company. Recently returned from an extensive trip in Central America, Mr. Yaras says



HERMAN YARAS

in part: "Mexico wants and needs American products as quickly as possible, especially those which will fit into the big industrial and agricultural program now under way. The time is now ripe for American manufacturers to consummate their plans for the distribution of their products in Central and South American markets."

The new company is now engaged in building a thoroughly trained and competent staff of men with actual foreign business experience. Mr. Yaras himself has lived in 26 countries, and successfully developed foreign markets for hundreds of American products and supplies. Further expansion of the organization is anticipated in the near future.



A. O. PEGG

Change in Yard Management

The California Shipbuilding Corporation recently changed its yard management to conform to the needs of the new Victory ship program.

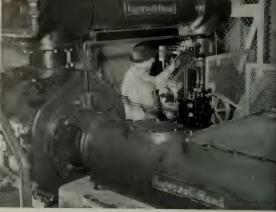
A. O. Pegg, former Outfitting manager, was appointed assistant general manager; and J. S. Sides, former Hull and Yard manager, was appointed Works manager, which position is responsible for both Hull and Yard and Outfitting work.

Calship owes no small amount of credit to these two men for the record-breaking jobs of the last two and a half years. Their performance is evidenced by the result of leadership, vision, and years of hard-won experience in both the shipping and shipbuilding field and the construction and engineering field.



J. S. SIDES





Casting drying machine.

Ingersoll-Rand compressor in foundry.

Castings for Marine Engines

The new foundry at the Joshua Hendy Iron Works, Sunnyvale, California, one of the most complete in the West, was built and functioning from first grading to the taking off the first iron in 135 days.

This company is now building: 2500-hp vertical triple expansion

steam engines for Liberty ships; 2750hp steam engines for the new convoy escort corvettes; and marine steam turbines and reduction gears for the U. S. Maritime Commission's C-1 and C-3 cargo vessels.

The new foundry is located in the northwest section of the property.

With the plant on the main coast ling of the Southern Pacific Railroad, the foundry has direct and easy access by spurs to rail service for delivery of sand, coke and metal. The building is a modern factory structure 294' by 425' in overall dimensions. Good lighting and good ventilation have been generously incorporated into it design.

The foundry has four main sec tions, three 75' bays under a common roof and an adjoining 60' material yard. The incoming spur track from the main line railroad passes just out side the material yard, with a spur track running through the material yard. Incoming coke and metals are unloaded directly from the cars to the material storage yard. Incoming molding sand is handled directly from the cars to an outside sand storage bin holding approximately three carloads, or to a hopper which leads to the conveying system serving the main sand storage, holding approximately eight carloads. Incoming core sand is handled directly from cars to storage bins in the core room in the east bay of the foundry.

The west 75' bay of the main foun-

View of section of foundry floor.



Page 88

building is occupied by the brass indry, the compressor room, shoot, we, cupolas and charging floor, in molding and storage and the aring room. The center "5" bay devoted entirely to molding and and reconditioning. The east 75" y embraces the core room, core ens, core sand storage bins, and ish and locker rooms.

The furnaces, three Whiting cupoare lined down to 60", 54" and "respectively. Combustion air for cupolas is supplied by three gersoll-Rand centrifugal blowers uipped with automatic air weight ntrol, these blowers having a cacuty of 2000, 6000 and 4400 cfm 1.25 lbs. pressure respectively.

High pressure air is supplied by an gersoll-Rand XRE-2 air compressor ving a capacity of 895 cfm driven a 175-hp synchronous motor.

The cleaning room is served by a ton crane having a hook height 34'. In this room are located a No. and a No. 20 Roto-Clone, used for ist removal, a 36" x 54" tumbling rrel, a Bridgeport safety emery inder, small tool grinders, a 10-ton atform scale, a 22' x 15' x 10' R-S r type annealing furnace equipped ith automatic oil and gas firing, and three - compartment Hydro - Blast stem for casting cleaning. This odern cleaning device speeds up perations greatly. It is operated by ree men. As well as cleaning out pres, it is used to sandblast castings. wo valuable contributions are also ade by the system beyond the serves of cleaning castings. The tremenous water pressure and velocity crees an air current which, in turn, ecomes a form of air conditioning or the plant, drawing the dust-laden arm air into the Hydro-Blast workg area, where the Hydro-Blast wets ut the dust particles as well as disenses cool air throughout the cleanig room. Secondly, the Hyro-Blast as made it possible to reclaim aproximately 75 per cent of the core and, which, after being washed and lassified, is collected in de-watering ins. After being de-watered, the and is removed from the bins by a rab-bucket to a truck, which, in urn, unloads the sand into one of the hain sand storage bins in the core oom.

A Milwaukee Foundry Equipment Company's No. 200 briquetting press s located in the northerly end of the naterial yard, This press has a capac-(Page 100, please)

Beardsley & Piper Speedslinger, first unit of its kind to be installed on the Pacific Coast.





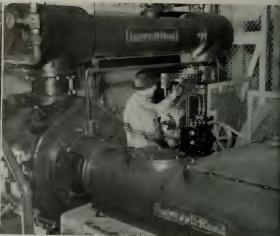


Core room

Atlas heating unit.







Ingersoil-Rand compressor in foundry.

Castings for Marine Engines

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Beardsley & Piper Speedslinger, first unit of its kind to be installed on the Pacific Coast







Atlas heating unit.

Core room



At picturesque Newport Beachin Southern California, the Nort American Shipbuilding Corporation is building wooden auxiliary craft for the U.S. Navy. This firm has recently finished a contract for aircraft rescue boats, and is now working on a contract for 45-foot picket boats.

The rescue boats are fast and ligh but sturdy craft, with a length of 3 feet 6 inches and a beam of approx mately 12 feet. They are built mainly of spruce and Philippine mahogany double planked, laid diagonally in opposite directions, with waterproof cemented canvas between and thor oughly riveted.

At the stern of each boat a sheel legs crane is fitted, with capacity to lift 4000 pounds. This crane is used to ease up parts of wrecked airplane in the rescue of injured personnel Eight stretchers for the care and transportation of injured men at part of the equipment. The hull o each boat is fitted with a special sling so that when they are carried on the deck of the aircraft carrier they can be readily lifted overside and placed in the water by a ship's crane.

Each boat is powered with two 300-hp Hall-Scott or Sterling gasolinengines, operating twin-screws and giving the boats a fine turn of speed.

At the yard, all boats are built of an assembly line basis, employing much automatic equipment and many time-saving devices. Hulls are built upside down on form jigs.

As will be noted in the illustrations herewith, these methods resultin clean shipshape Bristol-fashion hulls that move through the water with great ease, are very handy in maneuvers, and preserve comparatively dry decks and cockpits.

Aircraft Rescue Boats



Iron Fireman Builds Engines

Walter Foley (center), a plant foreman, accepts the "M" pennest with the gold star on behalf of fellow employees of the industrial dissission of the Iron Fireman Manufacturing Company. Holding the flag are E. C. Sammons, vice president of the company, and Lieutenant (igl John Brugmen, who made the presentation Lieutenant Brugman, a former company employee, commands a gua, crew of a Liberty ship.

A gold star for its "M" pennant was presented to the Iron Fireman Manufacturing Company on September 15 by the U. S. Maritime Commission. The ment award was made in Portland, Oregon, at the company's industrial division, which was organized in February, 1942, to build marine engines for Liberty ships.

E. C. Sammons, vice president, presented the gold star and merit badges to employees. Speakers were William A. Bowes, acting mayor of the city of Portland, and H. J. Detloff, financial secretary of Lodge 63 of the International Association of Machinists.

Iron Fireman is now one of the three largest builders of these tripleexpansion engines in the United States. Although the company has always been in the coal stoker business, two months after Pearl Harbor it took over an empty building, obtained machinery and machinists, both of which were at a premium in war industry centers, and delivered its first engine within five months These engines weigh 270,000 pounds, have a stroke of 48 inches, and have cylinders which range from 241/2 inches in diameter in the highpressure-cylinder and 37 mehes in

> Iron Fireman loads a crankshaft of one of its Liberty ship engines on a flatear. It requires four flatears to load all parts of the complete analine

diameter in the medium pressure cylinder to 70 m.hes in diameter in the low pressure cylinder. Now 30 engines are delivered each month.

The company turnishes all the engines for the Liberty ships built at Oregon Shipbuilding Corporation. Because it builds more engines per month than this record breaking shipyard builds Liberty ships, it sends its surplus engines to other ship

builders. When one of it, it is a dismounted it takes four flat or it ship it.

Iron Fireman is carrying in the production of commutation of the strad coal stockers in its plants in Portland, Cleveland and Toront. Busides the matine engines, it was production includes agriped parts for a chine guo mounts, and how it is a parts for army ordinance.



Chrysler Ingenuity Solves Tank Engine Problem





Details of the specially-designed power plant used in medium tanks of Chrysler Corporation manufacture may now be made public with the permission of the War Department Bureau of Public Relations. These engines, designed by Chrysler Corporation engineers and manufactured in one of the corporation's Chrysler Division Plants, have been in production for considerably over a year. They have been used in all "General Sherman" tanks of Chrysler manufacture, and were installed in some of the preceding model medium tanks. As the corporation has been making "General Sherman" tanks since the

Building engines for Chrysler Corporation tanks in one of the corporation's plants. A specially-designed engine has been used in all "General Sherman" medium tanks of Chrysler manufacture. Here is a view of the assembly line, with expert mechanics putting the finishing touches on the engines.

summer of 1942, and announced the completion of its 10,000th tank in mid-July of this year, it will be seen that a very large number of its engines have been used.

Shortly after the United States entered the war, the U. S. Army Ordnance Department put in huge orders for tanks. At that time facilities to produce tank engines were limited, and Chrysler Corporation was asked if it could design a tank engine that could be made quickly on automobile production machinery.

The corporation's engineers, working in close cooperation with Army Ordnance Department experts, proceeded to develop an entirely new

Individual engines being assembled on a fixture. Four are already in place, and the fifth will fit into the groove shown at the top of the fixture. ype of tank power plant that since as been used on thousands of Ar a can medium tanks.

This engine is made by an uping ve Chrysler engines of the standard ix-in-line automobile type around a entral crankshaft. Minor modeli a ions are made in the design of the omponent engines to fit them best or service in the tank unit, but they re substantially the same as the cororation was producing in time of eace. This meant that the Chrysler Division engine line could quickly et about producing them in quantity. eith relatively few new tools and xtures. Furthermore, a large per entage of personnel with long exerience in building automobile en ines could be employed on the tank ngine job.

The power of the five engines is ombined by the use of gears assemled in a transfer case. The center of he crankshaft of each engine is loated in a common circle. In place f a flywheel at the end of the crankhaft, each engine has a constantnesh gear which is in contact with a riving gear inside the transfer case. hese driving gears, in turn, drive a orger driven gear connected to the nain drive shaft through the clutch. By this arrangement all five engines re combined and transmit their ower to the transmission and final rive or differential through one arge drive shaft.

These conventional L-head type ngines are equipped with inter-hangeable insert type connecting od and main bearings, with hardened teel exhaust valve seat inserts, and have compression ratios which produce maximum power from regular trades of motor fuel.

Each engine has its own individual arburetor, of a type well known to nost mechanics for its simplicity and asse of adjustment, and these carpuretors are synchronized by a very imple method, easily adjustable, which eliminates the necessity of renoving the unit and sending it to ome expert for repair.

The electrical system is likewise of imple design, of a type familiar to very auto mechanic, and, in addition, t is a 24-volt system which permits imple current to be supplied to the tarter so as to make for easy starting under all types of weather conditions.

The oiling system is of the presure type design, combining both full low and by-pass filtration. This type of lubrication and filtration is an in-

Rear view of the tank engine. Secause the five component endive component endiversely of the standard automobile design, it was possible for the company to get into volume production quickly of the time when the demand for medium tanks was most urgest.



known to most mechanics, and is similar to the system that has been used in Chrysler-built engines for years. In addition to this proved oiling system, a seavenger pump has been provided to pick the return oil from the crankcase and force it through the oil filters and an oil cooler better returning it to the engine, and, in this way, the oil temperature is controlled, thus assuring long hie to engine parts

The power plant is complete with cooling system and clutch as a part of the engine assembly. A master water pump circulates the water through a full length water jacket on each cylinder block. Thus the pistons are kept at a constant temperature for the full length of their travel, greatly reducing oil consumption and ring wear.

Because of the full length water tackets, these surfaces contacted by the engine oil are kept cooler than would otherwise be the case, and this is reflected in a highly satisfactory oil control.

Any tank engine which must be enclosed in the tank hull and protected by ineary urner plate should be able to entitle and high operating temperatures, be use the aim option, has decoupled in the entitle and the cooling seed of the cooling seed of the high the discoling seed of the high the seed of the seed of the high the seed of the see

will boil to approximately 2.35 degrees, and patential the to combine running ten parabolished the charge method in the combine without injury. This colors are the started in a temperature of 10 degrees below 2.15 using 1 Word, and starting will be accomplished in only five so, and at 44 apps. Problem in of the power plant before starting is unnecessary.

More uverability of a tank is of extreme importance, so that the used dishits of high to appear at low enome speeds and an dim stiffactor up curve are essential if the direct is to entry out his varied assemblents to the host advantage. The Chrysler tank in one to appear in the contract as the enome speed is in rock I, and this holes to give this enome the flexibility that is so essential to incessful to the process.

The tank propolled by this encine is quarter and has best extent on than some to receive type. This factor eaks in keeping the tank and at the both est poser of fighter off this value of hang part of them, and as an large measure due to the large number of which is so by a limit that they consider a value to the transition of the third that the first of the main driven in the thirt that the first mark by a construction of the transition of the first of the

Keep Posted!

NEW EQUIPMENT AND MACHINERY FOR YARD, SHIP AND DOCK

Tandem Rheostat Assemblies

The tandem unit illustrated consists of eight Ohmite Model U. 1000watt, 12 · inch · diameter rheostats mounted in a sturdy steel frame. It is controlled by a single handwheel and is one of the largest units of this type ever assembled. Although this unit is unusual in that eight of the largest-sized rheostats are utilized, there are many other tandem assemblies that can be made up of two, three or more rheostats ranging in power rating from 25 watts to 1000 watts and in diameter from 1 9/16 inches to 12 inches. Rheostats in tandem are insulated from each other so that they may be used for simultaneous control of several circuits or phases of a circuit by means of one knoh



Tandem rheostat assembly.

Two rheostats can be separately controlled by means of concentrically located knobs. This may be done to conserve panel space or where it may be desired to use one rheostat as a vernier for another. In this type of unit two rheostats are mounted in tandem with the shaft of the rear unit extending through the hollow shaft of the front unit. For increased capacity, the front or back units can consist of several rheostats connected together.

Tandem rheostats are also available in taper windings and the same range of resistance values as individual units. They are made by Ohmite Manufacturing Company, Chicago, Illinois.

New In-Plant Feeding System For War Workers

Hot and cold foods, packed side by side to form a complete meal, may now be served up to five hours after filling through a new system for inplant feeding of war workers just announced by Mealpack, Inc., New York City.

The Mealpack Container, around which the system is built, consists of five earthenware food and beverage



In-Plant Feeding System

compartments, insulated within durable, attractive, pressed steel finishes in several standard colors. Each compartment is sealed with snap-in paper covers. A menu for preordering "tomorrow's meal today" is then enclosed, and the entire container is sealed for delivery to the worker who has ordered the meal. This Seal-Lock, applied at the kitchen or caterier's, also carries the worker's shop number to permit ready identification upon arrival at or near his working station, and also prevents tampering with contents en route.

Multiple Carriage Stop

Among the new products and accessories for increasing lathe production is a new Multiple Carriage Stop, made in sizes to fit all lathes, put out by the Dick Manufacturing Co., Los Angeles, California.

It is said that lathe production and accuracy can be greatly increased with the use of this fitting, whether used by skilled or unskilled workers. It clamps rigidly to ways of lathe in one minute, and once set is always set, giving four accurate indexed positions. It is foolproof and there is nothing to get out of order; a novice can get accurate depth and length.

Immediate delivery can be made from stock for 9", 10" or 16" lathes.



Multiple carriage stop.

KEEP POSTED!

The manufacturers of the new equipment announced in this department will be pleased to furnish complete details without obligation on your part. For quick service, please use this coupon.

PACIFIC MARINE REVIEW

500 Sansome Street - - - San Francisco

Send me descriptive data of the following new equipment as reviewed in your

(Identify by name of manufacturer and machine)

NAME.

BUSINESS

ADDRESS



Quick-Release Hinge

A wide range of marine applications, commercial and naval, are met by the Burklyn Quick-Release Hinge, originally developed to replace former methods of releasing ammunition chutes on aircraft machine guns. This device combines a hinge and a means of instantly releasing it for quick and easy removal of hatch covers, doors, emergency bulkheads, folding tables and seats, bunks, cabinet lids, etc.

The unit is composed of a bracket housing spring-loaded attaching pins. These pins are equipped with finger pads by which the pins are retracted and the hinged part instantly released.

Metal Saw in Wet Cutting Model

Developed for Johnson saw users engaged in work requiring ultra-highspeed cutting, this new model offers more than a dozen features. Units that usually require servicing and maintenance in similar equipment

keys from plant open after the sethe sex seeds Person as a loggreat to type alone by beating and the control in the section is Note that make no pared has some free persons the government of the state that It is a to define an always and extra section S = 1 1 per to automatically are June 1 x 17 1 1 11 the machine that a chart is we direct relative to Flade special The pump into its its step is I tart with machine and a stoods those at coolant is meson I thin outh use of a ram which smooths pump impulse. If dry outing is desired, the primp can be readily disconnected Johnson saws now in use mey be easily equipped with this coolant feature The unit is made by Johnson Manufacturing Corp., Albion, Michigan

A New Welder

A new model, the GR 49 heavy duty manually-operated transformer type alternating current welder, is an nounced by Glenn-Roberts Company of Oakland, California, and Indian apolis. It is definitely a "war baby," in that the machine has been engineered especially for the grueling service demanded by 24-hour-day, "day-week schedules of war production plants

The welder is designed and constructed with a large extra margin of safety to handle continuous welding loads, meorporating for this purpose an oversized core working at low flux densities. Two open circuit voltages give a very wide variety of applications, particularly for the welding of heavy plate, within the machine's output range of 100 675 amperes. It remains extremely cool at work, most



New G-R Model 49 heavy-duty industrial welder for manual operation

ing the temperator are split in a set NTMA river with a harm a forced ventulation exists in a supervision. However, the distribution is standard a pupulation to extra a set should be supervised to the river and should the target any temperature are discount inoperators are discount in a set of the machine will result.

Contactor with push bott in introl for the power is privided. When desired, the well-tron hand to extend, up in the from hand to extend, up in the Road from 1g" to 1g" done for its handled, the only required all st ment being a twest of the hardsyl. I

Insulator Replacements Keep Rod Holders on the Job

Insulators for welding red holders, designed especially to keep the "aid ers on the sub-longer with at most for frequent must be read to the public must be made to keep do by Rasmusson Ir in Winks of Whittee, California.

The insulators are of light weight durable molded a estimate of a date supplied for the inter- oil red greps and as boundles and taps. They are modeled to exercising a religion installation or leaders on an he made with on the pittings the nonutes. I'm eliminates med tout a ry manufaction In the Hamiltonia ment le non-state et l'ider life by reduce the man it is steel person made and a million to to The molded plastic us ! is per material and the second The insulators are available in quanthe sale of the sale of the sales i.s. i l hold-



New Model Metal Saw

Orthe Ways - SHIPS IN THE MAKING



H. M. S. Smiter going down the ways.

(Official U. S. Navy Photograph.)

Auxiliary Aircraft Carrier Launched

H. M. S. Smiter, an auxiliary aircraft carrier for the British Navy, was recently launched at the Tacoma plant of the Seattle-Tacoma Shipbuilding Corporation. It was the 47th launching at the Tacoma yard. The sponsor was Mrs. C. M. James, wife of Captain James, Operations Officer of the 13th Naval District.

Six C-2's Converted To Refrigerators

Six new C-2 type freighters built at the Moore Dry Dock Company in Oakland, California, have been converted to refrigerated cargo carriers and are now in service carrying frozen meat for Allied forces abroad

Each of the six vessels, all designed by the Maritime Commission for permanent use after the war, has a displacement of nearly 14,000 tons and a gross cargo volume of 502,000 cubic feet. The refrigerated cargo space is divided into two separately insulated cargo spaces which together have 14 compartments.

Two York centrifugal refrigerating compressors operated directly by steam turbines are installed on each ship to provide necessary flexibility and to conserve shipping space and weight. These are the first cargo vessels equipped with centrifugal compressors for cargo refrigeration.

Under the present design of the vessels, only frozen foods or precooled cargoes can be carried. Although refrigerating machinery is adequate to carry the heat load created by such products as fresh vegetables or fruits at field temperature, the air cooling surface in the various

holds would make the rapid temperature drop impractical. Frozen meat on the ships is to be loaded at a temperature not above 25 degrees and maintained at about 15 degrees.

Strengthening Friendly Relations

Chile and the United States, already joined in the cause of liberty, pledged continued close friendship after the war at ceremonies on October 14 at the launching of the S. S. Bernardo O'Higgins at Permanente Metals Corporation, Richmond Shipyard No. 2.

The vessel, named for the liberator and immortal Chilean hero, was christened by Senora Maria S. Urrutia, wife of Xavier Urrutia, consul general of Chile in San Francisco. Mrs. Carl W. Flesher, wife of the regional director, U. S. Maritime Commission, was matron of honor, and Senorita Maria Urrutia was flower-bearer.

Consul General Urrutia spoke of the permanence of the Good Neighbor policy among the Latin-American republics and the United States, while Director Flesher added that this launching represented "another token of the mutual trust and understanding now existing between Chile and the United States."

Senor Urrutia recalled that the centenary of O'Higgins' death was observed only last year, adding that the Chilean hero "did not consider his mission finished when his own country was liberated, but aided in the independence of others."

Troop Transport Launched

The Twelfth Naval District recently announced the launching of the U. S. S. General Harry Taylor, named after the Chief of the Engineer Corps, U. S. Army. The vessel slid down the ways of the Kaiser Shipyard No. 3, Richmond, California, on October 10, sponsored by Mrs. Maxine McHugh, an employee of the yard.

This was the tenth ship launched at Richmond shipyards in ten days.

Contract Awarded

Award of contracts 1.9 th. ... struction of two 150 the factors 1.9 th. & May 1.9 Manufacturing Company's William Ohio, plant was recently announced by the Maritime Commission.

The barges, constructed under Lend Lease, will be used by the War Shipping Administration for loading supplies for allied nations at parts on the East and West Coasts. Under terms of the contract, the company agreed to deliver the barges within 165 days.

Triple Launching

The S. S. Robert L. Vann is the first Liberty ship named for a Negro-Mr. Vann was for 28 years editor of the Pittsburgh Courier, a weekly Negro newspaper, and was a noted jour nalist, political leader and attorney. Under his direction the Courier became one of the largest Negro news papers in the world, with a circulation of more than 200,000, embracing most of the English-speaking countries. His widow, Mrs. Jessie M. Vann, sponsored the ship.

The other two ships were the S. S. John Fairfield, sponsored by Miss Frances Fairfield, the great-great granddaughter of the former Governor of Maine and member of Congress; and the S. S. Sumner I. Kimball, named in honor of another for

mer Governor of Maine.

More Twelfth Naval District Launchings

Bethlehem Steel, San Francisco, on October 17 launched the destroyer escort U. S. Witter, named after the naval hero killed aboard the cruiser San Francisco in the Battle of the Solomons on November 13, 1942. The officer was awarded the Purple Heart Medal posthumously. His widow, Mrs. Jean Carter Witter, sponsored the vessel

Kaiser Shipyard No. 4, Richmond, California, sent the U. S. S. Pocatello down the ways on October 17. Miss Thelma Dixey, great-granddaughter of Chief Pocatello, Indian Chief for whom the frigate was named, acted as

sponsor.

September's Shipyard Deliveries

The nation's merchant shippards delivered 160 cargo vessels totaling 1,652,651 deadweight tons during September, according to the Maritime Commission.

Oregon Shipbuilding Corporation

direction of the property of t

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Manham Lawrence Inc.

A Company of the second

SHIPYARD	No. of Vessels	Type of Vesse
labama Dry Dock & Shipbuilding Co. Mobile, Ala.	3	Tankers
merican Shipbuilding Co. Cleveland, Ohio	1	Ore Carrier
vondale Marine Ways, Inc.	1	Seagoing Tug
Westwege, La. arnes-Dulnth Shipbuilding Co.	5	Coastal Tankers
Duluth, Minn. arrett & Hilp	3	Concrete Barges
San Francisco, Calif. ethlehem-Fairfield Shipyard, Inc.	19	Liberty
Baltimore, Md. ethlehem-Sparrows Point Shipyard, Inc	2	Tankers
Sparrows Point, Md. California Shipbuilding Corporation	13	Liberty
Wilmington, Calif.	3	ET-1 Tonkers
Concrete Ship Constructors		Concrete Barges
onsolidated Steel Corporation, Ltd.	į	Special Type
Wilmington, Calif.	1 5	C-1 Cargo
elta Shipbuilding Co., Inc. New Orleans, La.		ET-1 Tankers
roemming Brothers		Seagoing Tugs
ilobe Shipbuilding Co. Superior, Wis.	1	Seagoing Tug
reat Lakes Engineering Works River Rouge, Mich.	2	Ore Carriers
bulf Shipbuilding Corporation	2	C-2 Cargo
louston Shipbuilding Corporation	5	Liberty
Houston, Tex. ngalls Shipbuilding Corporation	2	C-3 Cargo
Pascagoula, Miss. A. Jones Construction Co., Inc.	3	Liberty
Brunswick, Ga. A. Jonse Construction Co., Inc.	2	Liberty
Panama City, Fla. aiser Co., Inc.	4	Tankers
Swan Island, Portland, Ore. aiser Co., Inc.	2	Special Type
Vancouver, Wash. ancaster fron Works, Inc.		Coastal Tanker
Perryville, Md. lew England Shipbuilding Corporation		Liberty
South Portland, Md. Pregon Shipbuilding Corporation		Liberty
Portland, Ore. endleton Shipyards Co., Inc.		Seagoing Tug
New Orleans, La.	2	Seagoing Tugs
ennsylvania Shipyards, Inc. Beaumont, Tex.	26	Liberty
ermanente Metals Corporation Richmond, Callf.		
t. Johns River Shipbuilding Co.	3	Liberty
outheastern Shipbuilding Corporation Savannah, Ga.		Liberty
un Shipbuilding & Dry Dock Co.	1	C-4 Cargo
Chester, Pa.	5	Tankers Coastal Tanker
odd-Galveston Dry Docks, Inc. Gaiveston, Tex.		
Vestern Pipe & Steel Co.	!	C-3 Cargo





Left: J. Herbert Todd, vice president of Todd Shipyards Corporation, smiles anticipatively with his sister, Mrs. Margaret T. Richter, sponsor for the new Liberty ship William H. Todd, just prior to its launching.

TO KEEP THE TORCH OF LIBERTY AGLOW

A new link in America's mighty bridge of ships is forged by the New England Shipbuilding Corporation, South Portland, Me., affiliate of Todd Shipyards Corporation, as the Liberty ship William H. Todd rides at anchor following her launching on September 19. The ship honors the first vice president of Todd Corporation. She was later turned over to Greece after being rechristened "Amerikh."

Launching of S. S. James Cook

On October 28, 1728, in the little village of Marston, Yorkshire, England, there was born to the wife of Bob Cook, farm laborer, a lusty boy who was shortly thereafter christened James. At the age of thirteen this boy was apprenticed by his father to a haberdasher, but, not liking his master, the boy apprenticed himself to the master of a collier out of Plymouth. Applying himself to navigation problems, he was soon made mate of the ship, and in 1755 joined the Royal Navy, where his unusual talent for mathematics, observations and navigation soon put him in command of sloops of war on the Canadian coast. He saw the battle of Quebec, and was in on the recapture of Newfoundland.

In 1768 Capt. Cook was put in command of an expedition to carry on some astronomical observations and to explore the South Pacific. This voyage was so successful that on his return he was promoted, and during the next seven years made two more world-circling voyages of exploration. During these voyages he charted the coastal waters of New Zealand and much of Australia; discovered New Caledonia, Norfolk Island, the Isle of Pines, and the Sandwich

Islands (now Hawaii); determine the exact location of the Easte Islands, the Marquesas and th Friendly Islands; explored the north west coast of the North American continent from the Columbia Rive to Bering Strait; discovered that limi juice was the ideal preventive for scurvy, thereby gaining for the Brit ish tar the designation "limey" o "lime juicer"; was the first navigato to carry a good chronometer round the world and settle for all time the ability of the "watch" to determine longitude closely enough for al practical navigating purposes. The "watch" he carried was "K-1," Ken dall's replica of the famous Harrison No. 4 chronometer, which had beer awarded the £20,000 British Admir alty prize for "finding the longitude."

On the return from Bering Straits Capt. Cook proposed to resupply and rewater his ships at Hawaii. There on February 14, 1779, he was killed by hostile natives. He ranked among the truly great explorers of all time George Vancouver was a pupil of his and carried on his work.

On September 21, 1943, at ship way No. 8 of the "Calship" yard Terminal Island, Los Angeles, Miss Deanna Durbin of Universal Pictures smashed a bottle of champagne over the stem of a "Liberty" tanker and christened her James Cook.

More Launchings

Bethlehem-Fairfield Shipyard, Inc. Baltimore, Maryland, on October 12 launched the S. S. Stage Door Canteen, sponsored by Ilka Chase, well-known stage and screen comedienne The ship was named after the service center run by outstanding Broadway and Hollywood theatrical artists.

St. John's River Shipbuilding Company, Inc., Jacksonville, Fla., launched in September the S. S. Dwight W. Morrow, named in honor of the notable lawyer, banker, diplomat and senator.

Bethlehem · Sparrows Point Shipyard, Inc., Sparrows Point, Maryland, on October 3 launched the tanker U. S. S. Chikaskia, sponsored by Mrs. James L. Bates, wife of the director of the Technical Division of the United States Maritime Commission. This ship is the fourth of a group of 14 twin-screw tankers being constructed for the Maritime Commission, which in turn will be delivered to the Navy. California Shipbinkling Corporation, Wilmington, Coloronia, Loan had its 11th Liberty tanker on October 20, the S. S. Horace Soc. named after he noted naval architect and inventor. Sponsor of the vessel was Mrs. J. A. O'Connor, water of the Commanding General of the "th Service Command, Canada.

Consolidated Steel Corporation, Ltd., Wilmington, California, on October 18 launched the U.S.S. Muskogee for the United States Maritime Commission and the United States Navy. Sponsor was Mrs. S. B. Hudson.

Marinship Corporation, Sausalito, California, launched the S. S. Mission San Juan on October 14. Sponsor of the occasion was Mrs. Darrell D. Standifird. The ship was named for the mission that is 16 miles from Salinas, in San Juan.

Reconstruction of the Depleted Fishing Fleet

The construction of 361 vessels, to be added to the nation's depleted fishing fleet, was authorized during the last five months, and approximately 36 per cent of this is scheduled for Pacific Coast yards. The new vessels will help offset the number normally lost, destroyed, or withdrawn from fishing for age or other reasons, but will come nowhere near replacing vessels that have been requisitioned by the armed forces. Coordinator Ickes declared.

More than half of the vessels au thorized will be completed before the end of this year and may be able to get into active fishing in time to add to this year's fish supply. Most of the remainder are scheduled for completion in the first quarter of 1944.

Materials for the vessels are in cluded in the amount allocated under the Controlled Materials Plan by WPB to the War Food Administration, and are released for the construction of individual vessels on recommendation by the Coordinator of Fisheries.

Fishing vessels authorized for construction on the Pacific Coast as of September 30, 1943

Area 1-Washington and Oregon

- 29 purse seiners
- 5 trawlers
- 11 trollers
- 3 troller and halibut
- 12 sea skiffs

- $S = \frac{1}{1 + (1 + 1)} \cdot \frac{1}{1 + (1 + 1)} \cdot$
- 68 (44 to) ht 1 m 104 124 (1044)

Area 2 California

- 1 drain
- 2 treaters
- 1 troller
- 6 sea skiffs 20 miscelling as (including 14 tuna dippers)
- 55 (24 in 1943 31 in 1944)

Area 11 - Alaska

- 1 trawle
- 1 troller
- 4 miscellaneous
- 6 (To be completed in 1943)

Total Pacific Coast vessels to be constructed, 129

Recent Contracts Awarded by U. S. M. C.

Delta Shipbuilding Co., Inc., New Orleans, Louisiana, has been awarded a contract for the construction of St. Liberty ships

Higgins Industries, Inc., also of New Orleans, received a contract for the construction of 12 additional 168 foot cargo ships. The vessels are to have a beam of 32 feet, but are not quite half the length of the Liberty ship, which the yard had arranged to build at the rate of 24 ships per month under a contract canceled by the Commission in July, 1942

Southeastern Shipbuilding Corp.

search of the state of the stat

The Destroyer Dortch Built At Federal Shipyards

First time particle particles the specific for the process of the particle particle

"When Federal first began delivering destroyers to the Nove six years ago," said Mr Korndorff, two years were required for their construction. We now build them five times laster. The Nove stotes that the average time on destroyer building in the United States is now months. The Dortch record is 115 days tester than the national average."

A destroyer of the heavy type, to which the Dortch belongs.



MARINE DEPARTMENT
A E T N A I N S U R A N C E C O.
Q U E E N I N S U R A N C E C O.
MARITIME INSURANCE CO., LTD.
FIDELITY PHENIX FIRE INS. CO.
Commercial Hull Dept.
A U T O M O B I L E I N S. C O.

MATHEWS & LIVINGSTON

MARINE UNDERWRITERS

200 BUSH STREET SAN FRANCISCO

Offices at: Colman Bldg., Seattle • 111 West 7th St., Los Angeles

A NOTABLE KORT NOZZLE TUG

(Continued from page 71)

1.24 pounds per indicated horsepower per hour. This develops from a prime-mover water rate of 12.8 pounds per ihp per hour, which diminishes to 11.9 pounds at half

ower.

The four-bladed propeller, which is 8'-10" in diameter, with a 12'-6" pitch and a developed area of 40 square feet, rotates within the 9-foot-diameter Kort nozzle. The thrust transmission is through a No. GH-19 Kingsbury bearing. While running full speed ahead at 14 miles an hour, the tug was brought to a standstill within 22 seconds, or 125 feet.

Anticipating the overload potentials of the engine, the shipbuilder made provision in his steam cycle for adequate condensation and return boiler feed. The main condenser has a cooling surface of 1223 square feet, and through it 1800 gallons of sea water are circulated by a Warren-Morris reciprocating steam pump having a maximum capacity of 2400 gpm. Vacuum was easily maintained as high as 28" without overtaxing the Wheeler air ejectors, although the normal vacuum is kept between 26 and 27 inches. The condensate is returned through a 6" x 7" x 8" simplex vertical Warren steam pump to a feed and filter tank employing coke as the oil-removing medium. A Davis feed water heater raises the temperature to 220 degrees F., whence the water is introduced into the boiler by a 71/2" x 5" x 10" duplex Warren feed pump.

Two 71/2-kw Pyle-National turbogenerators, floating in a storage battery circuit, provide the electric current source for the Justine. The 56cell, 115-volt Willard batteries have a 214-ampere-hour capacity for ship illumination, as well as the operation of the electric Westco sanitary and fresh water pumps of 325-gph capacity, so that all crew conveniences for the 11-man personnel can be maintamed while the boiler is shut down in moderate weather during lay-overs. A Worthington electric pump and an independent blower are employed for cold boiler starting. Also

operated from the battery current are the American Engineering Company 7½-hp hydro-electric steering gear and the 800-cfm crew's quarters blower system. The 21" hawser gypsy, however, is powered with a two-cylinder 6" x 8" steam engine, and has a capacity of 60 feet per minute at 8000 pounds.

The construction of this tug is a continuation of the owner's policy to keep his fleet modernized by improving each replacement tug as much as the art of shipbuilding and engineering permits.

CASTINGS FOR MARINE ENGINES

(Continued from page 89)

ity of two tons per hour, and is used for briquetting cast iron borings.

A Beardsley and Piper Motive Type Speedslinger having a ramming radius of 20' moves the entire length of the main molding bay on a standard gage track equipped with an underground 3-phase, 440-volt Trumbull Electric Company trolley system. The Speedslinger, one of the largest models built, puts out as much sand in four hours as ten men ordinarily can do in eight hours.

Also located in the main molding bay is a Beardsley and Piper portable sand conditioning unit equipped with magnetic pulley, for preparing sand for the Speedslinger, and a No. 40 Beardsley and Piper speed muller for the preparation of facing sand.

All pits are within reach of the Speedslinger. Flasks are set up on either side of the track for machine ramming, and are then set back for pouring operations, permitting ramming operations to continue during

the pour-off.

The core room is equipped with two batteries of four each Young Brothers Company recirculating type ovens, automatically fired with oil or gas. These ovens are 12' wide x 10' high x 20' deep, and are equipped with cars having a capacity of 30 tons. Small cores are handled in a four compartment Young Brothers Company shelf type gas-fired oven.

Sand for the core room is prepared in two Simpson No. 2 intensive mix ers, equipped with loading devices which are located centrally in the core room between the two sand bins and are serviced by two operators The core oven, sand mixers and sand bins, together with wash and locked rooms and storage for oil, flour, pitch and compound, utilize approximately 30' of the 75' bay. The balance of the bay is devoted to core making and is serviced by four 3-ton 45 floor-controlled cranes. Transfer tracks extend from the core room into the main molding bay for the deliv ery of cores to the main bay of the foundry.

The main molding floor, 75' a 425', is served by two 30-ton and two 10-ton cranes having a hook height of 34'. The material yard is served by two 60' span 10-ton cranes having a hook height of 40'. The brass room is to be served by a 34 span Clevland tramrail having a crost travel of 75' and a hook height of 20'.

Considerable difficulty was encountered in securing all of the cranes for the foundry. In order to facilitate the coring-up procedure and to make the few overhead cranes available for main foundry operations, portable car type jib cranes were developed which can be operated from the Speedslinger track or from auxiliary tracks back of the several pits where they are used. The portable jib cranes are powered with air hoists and are so designed as to be removed from the Speedslinger track by the overhead cranes to the auxiliary tracks back of the several pits.

In order to conserve further the usage of overhead cranes, all pits are equipped with an ingenious clamping device developed by Arthur Knutson, foundry superintendent, so that the copes can be clamped down in a few minutes.

Heating and ventilation control are accomplished by a complete unit engineered by the Atlas Heating and Ventilating Company, San Francisco. The heaters are fired with oil burners and are thermostatically controlled for temperature.



SEVENTEENTH ANNUAL DINNER

THE PROPELLER CLUB OF THE UNITED STATES

AND

THE AMERICAN MERCHANT MARINE CONFERENCE

THE WALDORF-ASTORIA NEW YORK

OCTOBER 15, 1943

MARINE DEPARTMENT
A E T N A I N S U R A N C E C O.
Q U E EN I N S U R A N C E C O.
MARITIME INSURANCE CO., LTD.
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LUNCHEON TENDERED BY THE PROPELLER CLUB - PORT OF NEW YORK ΑT THE AMERICAN MERCHANT MARINE CONFERENCE THE WALDORF-ASTORIA NEW YORK OCTOBER 14, 1943



Running LIGHTS

Altho When Althore

Edited by B. H. Boynton



New Pacific Coast Finance Officer

Lieutenant (j.g.) Daniel J. Cole an, USNR, has recently been appointed Pacific Coast Finance Officer or the Training Organization of the Jar Shipping Administration.

Lieutenant Coleman, a native San ranciscan, began his sea service in 928 when he sailed as purser on the rge passenger liners of the Grace ine. He continued on the sea for a period of six years. In October, 1978 he on fleel in the U.S. Maritime S. record Alons di. California, and was experted to instructor in steams in the matting. He also taught the beauty part ular to the office of the second he Merchant Marine.

Been being commissioned in the U.S. No. I.R serve in November, 1912. Ico and don a U.S. Army

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New Marinship Executive
E. J. RISING, the newly-appointed Materials
Manager of Marinship Corporation, Sausalito,
tanker yeard.

Marinship Corporation of Sausalito, California, has recently set up a reorganization of its purchasing and expediting and stores divisions as a Materials Department under one responsible head.

The newly appointed Materials Department Manager is E. J. Rising, who now has the important task of directing and coordinating the activi-

Marinship's Materials Department



E. F. MILLER, Marinship Purchasing and Expediting Manager

ties of the firm in these three vital functions.

Under Mr. Rising and heading up purchasing and expediting is E. F. Miller, while the stores division is headed by R. E. Duba.

The new organization promises a

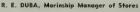
streamlined management in the procurement, delivery and storage of a materials and equipment for Maria ship's large ship construction program.

Trade Notes

Boyle Manufacturing Companthe U. S. Steel Pacific Coast ligh weight steel-fabricating subsidiar announced the change of its name United States Steel Products Company, effective September 23, 194

U. S. Steel Products Company his contracted to purchase the manufa turing assets of The Petroleum Irc Works Company, a subsidiary a American Republics Corporation, a cording to an announcement by Bejamin F. Fairless, U. S. Steel President.

The Petroleum Iron Works Corpany has manufacturing plants locaed near Sharon, Pennsylvania and Port Arthur and Beaumont, Texa





Case Construction

In 1932 the partners of Case Contraction Company saw an impresseduture for the Harbor of Los An oles and established themselves at their resent location, Berth 109, San Pero Since that time the company as built up a large marine department, at present doing a considerable art of the heavy lift work in the arbor and operating a fleet of tug outs. They have a crew of the most ompetent divers on the coast and uring the present war emergency Il branches of the marine department are operating 24 hours a day

The company has constructed reair facilities and marine ways for upbuilding concerns in the area and as also done considerable dredging Los Angeles and San Diego Harors under direction of the Federal overnment.

The company maintains a gunite epartment which, as subcontractor, as been active throughout Southern alifornia. Gunite is the pneumatic lacing of concrete and is used adantageously in the rehabilitation of unldings, construction and repair of ocks and piling, reservoirs, etc.

The general partners are W. A. phnson, who needs no introduction construction men on this or the set coast, and Vern D. Case, who as been connected with construction



Harry Gast, general manager, and B. McKinnon, sales manager of the Case Construction Co., Los Angeles Harbor, California

work for the past 25 years on the Pacific coast

The technical personnel are Harry Gast, general manager, W. D. Smith, marine department, F. W. Freeman, gunite department; and E. L. Silver, dredging department. All of these men have at least 25 years experience in their respective fields. Comptroller of the company is B. Mackimon who has been connected with Pacific coast industries for the last ten years.

Some Recent Production Awards

Warren Steam Pump Company, Inc., of Warren, Messi, bussetts in September 7, held presented in ormanise of the Army Nixy 1. Award to the men and we men of the organization in himor of their standing production of war materials.

The Edwards and Company, Incorporated, Norwalk, Commenticut, recently received a network of both the Army New To Award on the Maritime M. Award on an assert honer to be bestowed on an array management processed by the processed on an array management processed by the processed of the processed

Marine Refrigeration Representative

Ralph E. Manns Company of 10.24. Lest Analom Boulevard Wilming to Collection is the marine presentative for The Corner Corporate in the Image and the Marine Hostina They spended in the analom of the analom to move the first tion work, doing extensive the analom the installation, service and repair of all mathers as a point of all mathers are all mathers as a point of all mathers are all mathers as a point of all mathers are all mathers as a point of all mathers are all mathers as a point of all mathers are all mathers as a point of all mathers are all mathers as a point of all mathers are all mathers and all mathers are all mathers as a point of all mathers are all mathers are

The companies of Line the installation of Car it is a contract the month of Car it is a contract the month of the contract the contract that the contract th

Raiph E. Manns, president of the Raiph E. Manns Company, Wilmington, California





George E. Swett, General Manager, George E. Swett Co., dictates to his secretary, Mrs. Edith Bitgood.

When faced with getting immed ate results the present day instructions to steamship operating departments is "Try Swett," which is probably the main reason why the firm to George E. Swett & Company had boosted its batting average of water of the steams o

Starting in October, 1920, in small way, the company has move along constantly to its present postion as one of the leading marine et gineering contracting concerns in the national shipbuilding picture.

The firm fulfills a definite special ized engineering service for Easter manufacturers. Imagine the situation of each manufacturer engaged in surplying marine machinery to California was to attempt to furnish his ow staff of engineers! Certainly it would bring about impractical demands of manpower, and would boost costs by yond reason.

Marine-Industrial Supply Firm Unified for Prime War Effort



Left to right, William Pullen, pump department manager; Edith Bitgood, stenographer; Leighton Stone, mechanical engineer; Lois Anderson, assistant cashier; Bill Kinney, assistant superintendent; Leota Royce, cost accountant; Fred Murdock, sales engineer; Doris Cummings, cashier; Walter Keates chief storekeper; George E. Swett, General Manager; Sally Farqubar, billing clerk; Herb Southworth, chief engineer; Mrs. Irene Beals, stenographer John Daws, service manager; Lauise Caneveri, head bookkeeper, and Fred Esser, superintendent of construction.





The Swett personnel is a classical efficient organization of enginers and mechanics, maintained for stalling and servicing refriger to in dair conditioning systems aboard ip. During the present emergency actually all the installation work of trgo refrigeration conversion and requir in the San Francisco Bay Listrict fitted by the Swett Company.

A Repair Parts Service for these ommodities handled and installed is iven particular attention, and a large ventory of parts and supplies is car-

ed in San Francisco.

Some of the lines handled by the wett organization have been with hem almost from their beginning in 920, while others have been added a time went on to meet Pacific Coast emands for a greater variety of roducts. Following is a list of the ompanies represented locally by the



GEORGE E. SWETT General Manager

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Navy Day Celebration

Since first introduced in 1922, Navy Day has been celebrated on the 7th of October each year, under the uspices of the Navy League of the United States. This date is the aniversary of the birth of President Theodore Roosevelt so much of whose life was devoted to establishing a sound naval policy for this nation.

The Propeller Club of the U. S. Port of Los Angeles-Long Beach, oined with the Navy League at a uncheon meeting held at the Bilthore Bowl, Los Angeles, to celebrate he occasion, at which time the Hourable James V. Forrestal, Under secretary of the Navy, spoke to the gathering.

In San Francisco, Navy Day lunch con was held at the Commercial Club sponsored by the San Francisco Chamber of Commerce the San Francisco Commercial Club, the Navy League of the United States and the Junior Chamber of Commerce.

Honored guest and speaker of this occasion was Vice Admiral John W Greenslade, USN, Commandant 12th Naval District. Commander of the Western Sea Frontier

In Oddand, Like Merritt was the scene of a specticular mixal domainstration and crossing with all branches of the New types stid. The estates were James I by New York branches were James I by Landron, a branch V. Admiral lines W. Commission with the Marial lines W. Commission with the second



Hon. Roger Lapham, Mayor-Elect of San Francisco, addressing the October meeting.

High Lights of October Meeting

Highlighting the October meeting of the Port of San Francisco Propeller Club was an outline of the colorful history of San Francisco's world-famed "Trade Gateway" as given by Mayoralty Candidate Roger Lapham, dean of the city's shipping circles.

In a strictly non-political talk Mr. Lapham briefed possible courses of action to increase the already vital importance of San Francisco as a major world port. Early in his talk before the group assembled in the St. Francis Hotel he pointed out that "running for political office is a liberal education, and should be compulsory for every businessman."

The "Press Day" meeting, honoring members of the Marine press, was presided over by Vice President Fred Doelker, local head of the Grace Line. Secretary Eugene Hoffman read greetings from President Hugh Gallagher who had been called out of town and was unable to be present.

Bern DeRochie, "executive officer" on the bridge of Pacific Marine Review, introduced the members of the Marine press present at the meeting and cleaned up the remaining unfinished business of the recent Propeller Club Golf Tournament by

awarding a handsome trophy to Stewart Mudge of the General Electric Company's Marine Division.

Messrs. Mayard, Coakley and Welch, members of the State Board of Harbor Commissioners, were introduced, and in turn presented the board's technical aides present at the gathering.

Candidates for 1944

The Propeller Club of the United States, Port of San Francisco, Nominating Committee, appointed by President Hugh Gallagher and composed of Messrs. Harry Ewing, Chairman; Bernard DeRochie, George Jordan, Ralph Myers and Captain Henry Blackstone, have reported the following list of candidates for next year's officers and members of the Board of Governors, to be voted on at the Club's Annual Meeting scheduled for noon, November 17, at the St. Francis Hotel.

President, Fred Doelker; 1st Vice President, George A. Armes; 2nd Vice President, W. J. Bush; 3rd Vice President, Harry Ewing; Secretary Treasurer, Eugene F. Hoffman.

The Board of Governors are: One Year Governors: George A. Armes John Davidson, K. H. Donavin, John Greany, Robert D. Spear; Two-Year Governors: Fred Doelker, W. J. Bush, Harry Ewing, Chas. L. Wheeler, A. B. Poole; Three-Year Governors: Hugh Gallagher, Carroll Reeves, Joe Geary, Ed Crossan, W. Edgar Martin.



THIS IS NOT A DUET!

To our left, Bern DeRochie is introducing to Propellers' the members of the Marine Press. Club Secretary Eugene Hoffman is reading greetings from President Hugh Gallagher.

rnest M. Bull Passes

Apromised to a North furtime circles some that three of the entiry and for two to the conresident title A H B C Street Ernest M. Bull was it is duming ne first week in O tiller of Taxab ark, N. Y., ag days.

He began his association with the

hipping and istry in 1848 and with his tather in the interrise which was event after the sale he Bull Insalir Lim and the Bulli nore Insular Line, a when A H Bull & Carero manager 2 az 15

Mr Bull was a night the Jaritime Association of the Port of Sew York, and the address the forn Exchange Bank & Trust () Sew York, president to the Ports Vest Street Rellty Corporation and he Economical Homes Association.

eath of Wm. R. Beatty

With the death of William R. eatty, age 66, on September 5, at his ome near Hammond, Indiana, the eavy machine tool industry last amount f the leading figures. He was active



WILLIAM R. BEATTY

n the management title Butt Mo hine and Manufacturing Commit. Hammond, Indiana, which care in

ne founded 26 years at

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Frank H. Evers Passes

The host of friends and acquaintances of Frank H. Evers were shocked at recent news of his sudden unexpected death.

Mr. Evers, Principal Surveyor for the American Bureau of Shipping on the Pacific Coast, passed away in his sleep on October 11, after a brief ill-

ness, at the age of 76.

He was born March 16, 1867, in Plymouth, England, and started his colorful career as an apprentice aboard a British tramp steamer where he worked up to the position of Chief Engineer. During the Spanish-American War he was chief engineer on British steamers plying the China trade. His favorite tale was of steaming into the Gulf of Pohai during the Boxer Rebellion to unload horses at Taku Bar so close under the Chinese guns that they couldn't be brought to bear on his ship.

FRANK H. EVERS



After leaving the sea in 1900, Mr. Evers was associated with the late Captain H. H. Watson as an engineer surveyor and was superintending engineer for the Union Oil Company; also was instrumental in laying the first oil pipeline on the Pacific Coast. He was also a pioneer in developing pressure oil burners for ships, and played an important role in the development of Pacific Coast oil tankers. In 1916, he designed and built seven tankers for the Pan American Petroleum and Transport Company.

Mr. Evers often claimed that he was living on borrowed time for he was aboard the S. S. Progresso when she blew up at the dock of the Fulton Iron Works, San Francisco, on December 3, 1902. He was blown into the bay and rescued by a passing tug.

Later he was appointed a non-exclusive surveyor for the Bureau of Shipping in 1901 and Principal Surveyor in charge of the Bureau Office at San Francisco, January 15, 1918, remaining in that capacity up to the time of his death.

He is survived by his widow, Anne M. Evers; a daughter, Mrs. W. Bowen Marks of Sacramento, and two sons, Dr. Graham Evers and Kenneth Evers, both of San Fran-

The funeral on October 13 was followed by cremation at Woodlawn Cemetery.

Veteran APL Employee Passes

W. F. "Jimmy" Arndt, veteran employee of the American President Lines and its predecessor the Dollar Steamship Lines, passed away at his home in Redwood City, October 8, following a sudden heart attack.

Mr. Arndt joined the Robert Dollar Company at Chungking, China, as assistant manager in 1924 and spent most of his 20 years in the shipping business in various posts in the Orient. He was acting General Agent for the American President Lines at Hongkong when the Japanese attacked Pearl Harbor and was interned with other American citizens in Hongkong. He was among the first group of Nationals to be exchanged on the Steamer Gripsholm seven months later, and on September 14, 1942, returned to Redwood City to join his wife and ten-year old daughter, Rosemarie, who survive him.

The mechanical packing industry has lost one of its prominent chemical engineers and inventors in the accid dental death of Dr. Charles P. Teeple, vice president and director of research of the Crane Packing Company. He pioneered numerous improvements and is widely recognized for his notable contributions to the development of modern industry. He held a doctor's degree in metallurgy from the University of Michigan and was a member of the Society of Automotive Engineers and Illuminating Engineers Society.

On October 16, Lewis A. Deppman became port engineer for Sudden & Christenson. He recently served with the War Shipping Administration, handling conversion and repairs Prior to joining the Government, he was chief engineer aboard the President Cleveland when the vessel operated for the Dollar Line.

Rear Admiral James A. Alger, U. S. Coast Guard, retired, has been recently appointed Special Representative of the Coordinator for Ship Repair and Conversion, for the West Coast. His headquarters are 155 Sansome Street, San Francisco 4, Cali-

In the Service

Stafford Harlow, resently retail by the Army, has joined the War Shipping Administration in Los Angeles as assistant to Edward H. Harms.

Harlow is well known in Pacine marine circles as he was assistant district manager for the American Hawaiian Steamship Company's Los Angeles Offices for the past twenty five years.

Captain Giles C. Stedman, U.S.N., is now commanding officer of the U.S. Merchant Marine Academy at Kings Point, N. Y. He succeeded Captain James H. Tomb, who recently retired.

Captain Stedman is known on the Pacific Coast as well as on the At lantic as he was skipper on the liner America, the liner Washington and the Manhattan.

Congratulations were sent by secres of friends of Captain John Backlund, skipper of the schooner C. S. Holmes, when the Navy announced he had been promoted to Lieutenant Commander.

Owner of the C. S. Holmes since the death of his father, the late Captain Jack Backlund, Sr., he plied his craft in the Arctic fur trade and the salmon fishing industry for years Last year the craft was taken over by the Government and is now serving as a barge.

Lieutenant Commander Backlund has been in Atlantic duty for the past year.

Mariners who know the waters of the Far North will be glad to hear that an old shipmate has just won high recognition from his Govern ment for forty years exemplary service. Chief Warrant Officer William A. "Bill" Woods, who sailed on the old revenue cutter Bear for so many seasons on patrol from Oakland the property to the Bering Sea, has been made Lieutenant of the United States Navy.

"Bill" had been retired when the Japs struck Pearl Harbor. Back into service he went. He is one of the best informed men on Alaskan witters well as a genuine all meaned chack. Coast Guard officer.

A. R. Harbaugh, it is a second of the first and a second of the second of the first and a second

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San Francisco Bar Pilots

Captain Arthur Self of the Sar Francisco Bar Pilots Association an nounces the following well-knowin masters as being confirmed as new members of the Association following the appointment by Governor Earl Warren. For the duration of the war all the San Francisco Bar Pilots are members of the United States Coast Guard and are constantly piloting ships in and out of the Golden Gate

The new appointees are: A. H. Koshkin, 2219 Forty-third Avenue, F. C. Gaidsick, 675 Twentieth Avenue; John C. Murphy, Field Hotel, all of San Francisco B. C. Parker, Forestville: and L. A. Rasmussen, 522 Crofton Avenue, Oakland, California.

Arthur J. Williams, an official of the United States Martine Commission since its establishment in 1956, has been appointed Secretary of the Commission and the War Shipping Administration, the Commission and the WSA announced recently.

Williams has a record of more than 25 years in Government service all of which was sport on count to so with maritime activities. He was connected with the Legislance Plant Corporation and its successors, the U.S. Stopping Board in dith. Mariens, Comparison Planta proof of this pent discussion. Planta pent di

C. H. Matson Passes



CLARENCE H MATSON

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F. B. DeLONG,
Newly appointed Vice President and General
Manager of Sales for Columbia Steel Company.

New Office in the Navy

The Navy recently announced the creation of an Office of Assistant Director of Navy Public Relations for the West Coast with Commander Alfred J. Bolton in charge.

The new office, to be located in Los Angeles, will coordinate naval public relations activities in the 11th, 12th and 13th Naval Districts and the Western and Northwestern Sea Frontiers.

The promising career of William T. Holtbuer, age 46, well-known North Pacific steamship executive, was ended by his unexpected death following a heart attack in Portland, Oregon, on October 10.

He had been associated with the McCormick Steamship Company since 1932, and only a week before his untimely death, he had been promoted to the position of district operating manager, with headquarters in Portland, according to announcement by Charles L. Wheeler, executive vice president and general manager.

Captain R. E. Moon has recently been transferred from Portland to San Francisco to be port captain for Moore-McCormick Steamship Company, and is at present renewing old acquaintances in the Bay Area's maritime world. He has been with the concern for a quarter of a century and is one of the most popular skippers in the company's service.



James Carroll, first senior electrical inspector for the Maritime Commission of Moore Dry Dock Company, Ockland, Calif., exchanges a check for war bonds with F. E. Ready, manager of the Broadway-Grand Avenue Branch of the Bank of America.

Veteran Machinery Inspector Dies



FRED CHRISTIE

Officials of Marinship Corporation recently reported the death of Fred (A. J.) Christie, on October 4. He had been Principal Machinery Inspector with Marinship since the corporation's beginning.

New Fiberglas Manager Of Pacific Coast Aggregates

Grant Austin is the new manager of Fiberglas Products Division of Pacific Coast Aggregates, Inc., according to recent announcement by the company.

Gayle R. Dutton and Chester A. Leighton, formerly the manager and assistant manager of this Division, are no longer connected with the company.

Appointment of A. N. Morton, vice president in charge of production for Mack Manufacturing Corp., as a member of the advisory committee for the automotive, farm and tractor liquid-cooled gasoline engine industry, has been announced by the War Production Board from Washington. Mr. Morton was appointed production chief of the manufacturing interests of Mack Trucks, Inc., in February and became vice president and director of Mack Manufacturing Corp. recently.



JOSEPH T. HARE

Widely known and popular veteran of many years in the engine room, Joseph T. Hare is now "riding at anchor" for the duration. Mr. Hare is now Local Manager at Los Angeles Harbor for the Division of Maintenance and Repairs of the War Shipping Administration. He came to the job well qualified after his long term of sea duty as steamship engineer.

New Plywood Executive

Lawrence Ottinger, president of the United States Plywod Corpora tion, recently announced the appoint ment of Clay Brown as assistant to the president of the Corporation The new executive has spent his entire business career in the lumber. plywood and allied wood products lines, commencing with the Long Bell Lumber Company in Kansas City and also serving the company at Longview, Washington. He left Long-Bell to join the M. & M Woodworking Company, of Portland, Oregon, as General Sales Manager. Recently he served with Smith Wood Products, Inc., likewise of Portland, as vice-president and manager of the Plywood Division.

Recognized as one of the country's leading experts on aircraft woods, spar materials and plywood, he is widely known by his coverage of the major wood products markets of the United States, particularly along the Pacific Coast. Before the war, he visited England and France inducing foreign buyers to increase their purchases of American woods. Both the British and French. Governments bought West Cost woods for use in the woodworking

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Mr. Bereiter of the Indian Plant Plant I Street Plant I Compared on the New York Confus Was Area Street

Kelvin-White Company Wins New Maritime Award

The Kelsen & Wiffred O Wind Company, Boston and New York manufacturers of reasonable of ment, how recently been excited by the Maritime Commission a Gold Star to be added to their Maritime "M". Pennant "in recognition of continued achievement in completing wartime schedules in the manufacture and delivery of merchant ship components."

Wilfind O Whate, president of the Kelvin-White Company, began man ufacturing and selling compasses binnacles, and other navigational equipment in 1970. The volume of business has constantly increased Today, production has been converted 100 per cent to the armed forces George B. Doane, treasurer, is in charge of production.

Whitley B. Moore Made Director of Sales at Timken

Officers of The Timken Roller Bearing Company recently an nounced the appointment of Whidey B. Moore as Director of Sales for all divisions of the company, including industrial, automotive, railroad, so the sales, steel and tube, and took but the to be succeeded in his present position of General Manager of Sales of the Timken Steel and Tube Division by C. H. McCollam.

Whitev B Moore graduated from the University of Machene in 1915 with obligate in machine derigine ting and served in the Navy during the last war. Immediately after the wither immediately after the site of the Silver in the Silver immediately after the silver immediately after the wither immediately after the silver immediately after



L B JACKSON

Recently appointed Director of Engineering for the Diesel Division of American Locamative Company

which at that the second solution of all ment created to develop the system in a second solution in the second solution is a second solution of the second solution in the second solution is a second to a second solution in the second solution is a second to a second solution in the second solution in the second solution is second solution in the second solution is second solution in the second solution in the second solution is second solution.



I B McCORMICE

L. B. McCorrect Control Contro



Jimmie Dean (right), managing partner of Dean and Hoffman, Long Beach distributors of the ventilators, explains operation to his plant engineer.

Every mariner who has gone to sea as shipmate to marine ventilators of the orthodox cowl or circular types knows that under certain conditions of wind these ventilators, instead of exhausting the foul air from a space, actually induce a draft of air into the space, backing up the foul air and often spoiling the work of ventilating fans.

A few years back, the G. C. Breidert Co. of Los Angeles, after much



scientific reasearch in aeronautics brought out a ventilating head of revolutionary design, which they manufacture and sell under the trade name Breidert-Air-X-Hauster.

Under tests, on buildings all over America and on many types of ships covering the "Seven Seas," this ventilating head has demonstrated that it converts the power of any breeze blowing in any direction into a positive suction force that achieves standards of ventilating efficiency never before approached.

The marine type of the company's ventilator has been installed and is in satisfactory service on Maritime Commission cargo vessels of all types, on naval and naval auxiliary craft built on both coasts of the United States. Our illustrations show a variety of such installations.

In the wind tunnel of the Smith Emery testing laboratories, San Francisco, this ventilator was tested under varying velocities and angles of air current ranging from 0 to 10 mph and from 30 per cent off the vertical upward through six angles to the vertical downward. The average velocity of air sucked out through the throat ranged from 175 fpm with a breeze blowing 10 mph. These velocities are substantially higher in both instances than those claimed by the manufacturer; in fact, at the 10-mph breeze they are 50 per cent higher. Similar results were obtained in tests in other wind tunnels.



Bulkhead type ventilator on deck house of frigate at Wilmington outfitting yard of Consolidated Steel Co.

Precision Ventilators

There are no moving parts—nothing to get out of order. No tan is necessary under ordinary conditions. No back drafts are possible under any condition.

Thus a dependable precision in strument whose performance is predictable under given conditions is ready to take the place of the unpredictable cowl.

Another very important advantage is its blackout ability. No light is transmitted through its equipment. Because of this, and also because water will not splash through it, it finds very useful application as a port hole ventilator or as a deck ventilator for cramped quarters on Navy and Army auxiliary craft.

In ships of convoys traveling blacked-out, the ordinary ventilating heads have to be blanked off to keep any interior lighting of quarters from showing positions to lurking subma-





Right: Another view of the ventilator on the frigate.

Left: A ventilator on the galley smokestack of a frigate at Consolidated yard



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(All photos courtesy Marinship)

Marinship Corporation has increased the life expectancy of rubber tires on heavy equipment in its Sausalito shipyard by more than 300 per cent by installing unique steel tire guards on all Ross Carriers, mobile cranes, trucks and trailers.

Six months ago the average life of a heavy duty tire in the Marinship yard was approximately 30 per cent of normal expectancy, due to constant snagging and tearing of casings on projecting steel. Since installation of protective steel guards, this life expectancy has been increased to 90 per cent of normal. Purchasing Division records substantiate this startling fact by showing a two-thirds cut in the number of replacement tires required

Credit for this outstanding achievement in prolonging the service of critical rubber goes to the vard's Transportation Committee, formed in February, 1943, in response to a directive from the Office of Defense Transportation. First action of the Committee was to survey the condition of all rubber tires on transportation equipment, and results showed that practically every tire had deep gashes from contact with sharp pieces of steel. In some instances, tires had to be replaced after alarmingly short periods of service-on some the tread was barely worn.

Ross carriers operating in the steel yard received first attention. A forward buffer guard was designed to protect against head on contact, and wheel disks were installed to protect the side walls. After testing on a single Carrier, results were so successful

tenance Flectrical Division

that similar equipment was installed on all Ross Carriers.

The wheel disks were then adapted to crane, truck and trailer wheels, and at the present time every piece of rubber-tired mobile equipment in the yard has a full set of these protective disks.

Two other steps were taken to insure long life for transportation rubber. Every effort was made to provide ample clearance on all yard roadways for mobile equipment by more systematic storage of steel and other supplies. Also an Electro-magnet road cleaner was designed and constructed to keep roadways free from nails and other sharp metal objects. Operation of this machine has resulted in a 70 per cent decrease in punctures.

Shipyard

Saves Rubber

The Marinship Transportation immittee has been commended by Office of Defense Transportation its initiative and resourcefulness helping to conserve the nation's tical stock of rubber. Members of Committee are Fred Sargent, ansportation and Maintenance unager; J. G. Hutchinson and G. Ollie, Purchasing Division; Walter I, Garage Superintendent; and Samster, Employee Transportation and tioning Supervisor.

Lumber carriers used throughout the Marinship yard have been equipped with these steel protective guards and wheel disks, with a resulting substantial decrease in tire replacement purchases.

Sam Lester (right), coordinator of Marinship's tire conservation program, inspects gashes made in the tire of a lumber carrier by contact with steel plates prior to installation of protective steel tire guards and disks.



Committees of the Marine Exchange

by W. A. Cremer

COASTWISE

R. F. Burley—McCormick S. S. Co. G. V. Cooley—Amer. Haw. S. S. Co. H. C. Cantelow—Marine Terminal Assn. Geary - Lillick, Geary, Olsen & Charles M. D. McCarl-Port of Oakland R. W. Myers-Shipowners Assn. of Pac.

Coast

H. Ohm—Port of Stockton
R. J. Ringwood—Coastwise Line
W. G. Stone—Sacramento C. of Comm.
J. C. Strittmatter—Consol, S. S. Cos.

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E. C. Binder—Hoyt, Shepston & Sciaroni
A. J. Fritz—A. J. Fritz & Co.
C. J. Madsen—Thornley & Pitt
G. E. Mulcahy—H. B. Thomas & Co.
R. C. Robinson—Harper, Robinson & Co.
R. S. Van Duyne—R. S. Van Duyne &

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W. B. Gribble—W. P. Fuller & Co. J. H. Jensen—Matson Navigation Co. J. W. Jory –Board of Marine Univ Jory -Board of Marine Underwriters

R. N. Nason, Jr.—Stauffer Chemical Co. R. A. Norton—Shell Oil Co., Inc. B. D. Robertson—Standard Oil Co. of Calif.

A. E. Stow-Amer. Haw. S. S. Co.

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H. L. Evans—Pac. Mar. Ins. Agencies
J. T. Greany—Beth. Steel Co. G. R. Hampton-Amer. President Lines A. B. Johnson, Jr.-A. B. Johnson Lumber

E. J. Macfarlan—Stand. Oil Co. of Calif. H. Middleton—War Shipping Adm. W. F. Minehan—Bank of America F. O'Connor—Donovan Lumber Co. J. Parker-Amer. Marine Paint Co.

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A. B. Poole—Amer. President Lines R. S. Quinlan—B. C. Ireland R. V. Winquist—General S. S. Corp.

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G. Westman-Pioneer Line

LAW W. Dorr-Dorr & Stevenson G. Graham-C. G. Graham P. Griffiths -- McCutcheon, Thomas.

Matthew, Griffiths & Greene G. Harrison-Brobeck, Phleger & Harri-

L. Henry-L. Henry R. S. Laughlin—Treadwell & Laughlin I. S. Lillick — Lillick, Geary, Olsen & Charles B. McKeon-Wright & McKeon A. Quinby-Derby, Sharp, Quinby &

Tweedt T. A. Thacher-Thacher, Jones & Casey

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MARINE SAFETY

H. Blackstone—U. S. P & I Agency, Inc. B. O. Pickard—Acc. Prevention Bureau R. True-Fireman's Fund Ins. Co. G. D. Washburn-Stand, Oil Co. of Calif.

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PORT REGULATIONS

J. H. Jensen—Matson Nav. Co. G. E. Mulcahy—H. B. Thomas & Co. M. J. McCarthy—Berry & McCarthy R. E. Pyke—Grace Line D. Robertson-Stand. Oil Co. of Calif. R. C. Robinson-Harper Robinson & Co. S. Van Duyne-R. S. Van Duyne 3

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SHIP DOCUMENTS

H. B. Adams—J. J. Moore & Co. O. J. Beyfuss—O. J. Beyfuss A. K. Hulme-General S. S. Corp.

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F. H. De Pue - Hough & Egbert W. Hill—Babcock & Wilcox Co. R. L. Johnson - Robt. L. Johnson Co. C. M. Le Count - General Electric Co. E. Martin-Westinghouse Elec. Co. Reserve De Laval Steam Turbine

Co. A. Short Co. Coccor, Wheeler R D. Space Foster Wheeler Corp. A. W. Sperry-Crane Co. G. E. Swett-G. E. Swett Co.

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R. J. Deremer—W. R. Chamberlin & Co.
W. H. Hogberg—Sudden & Christenson
C. J. Madsen—Thornley & Pitt
H. Norton—De la Rama S. S. Co.
D. Paine—Coastwise Line
W. G. Perow—Luckenbach Line
J. H. Harris—Oliver J. Olson Co.
F. D. Scheley—Matson Navigation Co. E. D. Scheley-Matson Navigation Co. S. B. Souza—Amer. President Lines I. C. Warner—General S. S. Corp.

STEAMSHIP AFFAIRS & OPERA-TIONS (AMERICAN)

Bush-Amer. President Lines W. R. Chamberlin-W. R. Chamberlin & Co. R. O. Demarest-Sudden & Christenson:

Inc.

L. Doelker-W. R. Grace & Co. D. Doswell-United Fruit Co. H. C. Ewing-Luckenbach S. S. Co. H. G. Lwing—Luckenbach 3. Co. H. Gallagher—Matson Navigation Co. T. C. Greene—Norton, Lilly & Co. J. A. Lunny—McCormick S. S. Co. R. A. McLaren—Williams, Dimond & Co.

D. Morrill-Weyerhauser S. S. Co. W. Myers-Shipowners Assn. of the Pacific Coast H. H. Pierson-De la Rama S. S. Co.

W. T. Sexton—Coastwise Line A. P. Smith—Moore-McCormack Lines

A. E. Stow—Amer. Hawaiian S. S. Co. J. C. Strittmatter—Consolidated S. S. Cos

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J. Feragen—Fred Olson Line
E. Krag—Interocean S. S. Corp.
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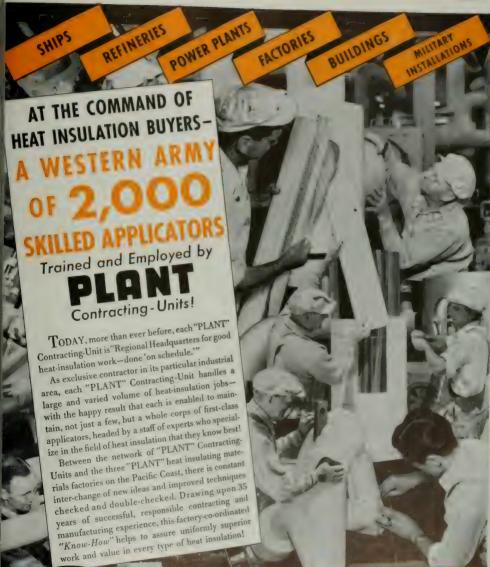
O. Wiedemann-Union Oil Co G. D. Zeh-Tide. Assoc. Oil Co.

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Valves

for Marine Diesels



In a diesel engine of the ordinary four cycle type, there are in the head of each cylinder two valves upon whose proper functioning depends the efficiency and fuel economy of the diesel combustion cycle. These valves are the inlet valve and the exhaust valve. They work under great heat stress, and although the cylinder head is water-cooled, the heads of both of these valves are subjected momentarily at every fourth stroke of the piston to the full temperature of combustion inside the cylinder. In the case of the exhaust valve there is the additional strain of the hot exhaust gases passing over the face of the valve. Much leaking of valves is caused by heat distortion, and a diesel

Grinding a valve. Left to right are Birger A. Gunthe, shipyard representative; "Butch" Cunningham, grinder specialist; and Lawrence E. Drake of Thompson Products West Coast Sales Department.

Inspecting the finished valve.

with leaky valves soon loses its high fuel economy.

To offset this danger, the Thompson Products Company brought out in 1924 its famous heat-resistant valves, incorporating a head composed of heat-resistant alloy steel electrically welded to a stem composed of a steel alloy with high resistance to wear. This gives a sturdy one-piece valve that is very highly resistant to corrosion, to head distortion, and to wear.

The service records of Thompson valves are rather startling. One Danish motorship reported making three 17,000-mile round voyages without changing a valve. Prior to the installation of Thompson valves in the engines of this ship it had often been necessary to change valves two or three times during each voyage.

The plant at Bell, California, has an authenticated record of one valve in a certain motorship covering 70,000 miles of sea travel. During the 6500 hours' running time the engines of this ship turned over 39,800,000 revolutions, and without developing any leak this valve withstood 19,900,000 impacts against the valve seat.

The plant in which these valves are manufactured is equipped with modern precision machine tools, and is operated under strict control to produce valves finished to extremely close tolerances.

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Hot off the Press

"Marine Deaerating Heater" is the subject of the recently published 4-page Bulletin N-14 released by the Heat Transfer Department, Elliott Company, Jeannette, Pa. A cutaway view of a typical Elliott marine type deaerating feedwater heater is a feature of this bulletin. The operation of the heater is illustrated in detail.

A Condenser Tube Manual has just been published by Bridgeport Brass Company, Bridgeport 2, Conn. It is a compact ready reference on tubes used in condensers, heat exchangers and evaporators in power plants, ships, oil refineries and process industries, including comparatively new and more corrosion-resisting allovs, such as Duronze IV, Cupro Nickel, Cuzinal, as well as improved Admiralty, Muntz and copper. This technical booklet should be in the hands of every power plant, marine and refinery engineer and chemist who is interested in reducing the destruction and wastes from corrosion.

The well-known Valdura line of heavy duty industrial maintenance paints is now included in the new catalog just issued by the American-Marietta Company, Chicago. Fully illustrated, it provides application suggestions, product descriptions and technical data in complete detail.

The New Fairbanks-Morse Protected Polyphase Squirrel-Cage Mo-

tor is fully described and illustrated in Bulletin 1160, recently published.

Koppers Company, Wood Preserving Division, Pittsburgh, Pa., has recently issued a booklet on economical and permanent construction with pressure-treated wood, against decay, fire, acid, termites and marine borers.

"To Help Build Better Ships Faster," a catalog published by Josam Marine Manufacturing Company, Cleveland, Ohio, is a gold mine of valuable information to naval architects, marine engineers, shipbuilders and others interested in the design and selection of air ports, deck drains, fixed lights, sounding plugs, scupper valves, strainers and other similar products. This 28-page catalog contains illustrations, descriptive and technical data, and is available to those in any way connected with ship construction.

"Preventing Welding and Cutting Fires" is a new booklet printed by the International Acetylene Association to instruct users of welding and cutting equipment in reducing potential fire losses. It contains brief, clear discussions of the chief causes of fires, and practical, common-sense measures for preventing them.

New uses for synthetic resin glass a vital war material are describ in "Laucks Synthetic Resin Glues to War," published by I. F. Lauc. Inc., Seattle, Wash. The 20-page lustrated brochure shows how the glues are used in the construction wood-and-glue airplanes, ships, of the shomes and buildings, archand beams, and such smaller items laminated pulley wheels, ammuniti boxes, cleats, etc.

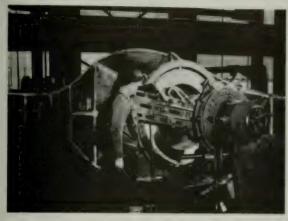
"Keep Flowmeters Accurate" is practical guide to accurate meteri printed by Wm. C. Bennett of Cocrane Corporation, Philadelphia, I It forms an eight-page manual iflowmeters—how to install them correctly and keep them accurate. To author has achieved an intense practical presentation on the preve tion and cure of meter ills to the eight the flow charts of America's ce tral stations, institutions and indutrial plants may do a 100 per ce job for today's war effort.

"Remote Water Level Indicato is the title of bulletin No. WG-182 recently printed by the Yarnall-Wa ing Company, Philadelphia, Pa. Pr fusely illustrated with detailed d scription of the unique mechanis and methods of installation, it show the instrument in use in the boil rooms of leading utilities, industriplants and institutions. The princip of the device is to bring the boil water levels down to eve level rea ing on a brilliantly illuminated tw color scale mounted on the plan instrument panel or other convenie location.

An Industrial Refrigeration Boo let (3AC-0201) on air conditionis and industrial refrigeration has been recently published by Westinghou Electric and Manufacturing Cor pany, from East Springfield, Mai This 20-page booklet illustrates at describes the exclusive hermeticall sealed compressor, and traces its d velopment from the 1932 models t to the present design. It also includ explanations and diagrams concer ing the principles of air conditionin and illustrates the complete line equipment for air conditioning at industrial refrigeration, including models from 1 to 100 up.

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"Strainers for Marine Service" is a rochure put out by Elliott Company, eannette, Pa. Their strainers for the narine service include the Duplem and Macomb type, which are detailed in this new bulletin; their construction and operation, including their sess for continuous service in fuel and the lines, are described with an acompanying page of sketches and limension tables.

"Marine Boiler Water Testing," a pooklet prepared by W. H. and L. D. Betz, Consulting Chemical Engineers. rankford, Philadelphia, Pa., is titled Boiler Water Analyses for the Ma ine Engineer." It will prove of coniderable interest to all port engiheers, chief engineers and others conerned with this important work. It s based on the revisions and modern zed specifications for boiler water est kits made by the U.S. Maritime Commission, and is profusely illusrated, with accompanying text laining in detail the methods of anal ses for performing the tests procribed, which are being applied to new Victory ships under the sugar vision of the Commission.

"Positioning Equipment," a new four-page, two color bulletin (No 201) just released by the Ransome Machinery Company. Dunellen, N. J., presents in consist to fin their full line of welding positioning equipment. Specifications, unportant for turns, load rating tables, and dimensions are included.

"Pneumix in Action" shows the air motored agitators in use in different types of work, and contents a citalor of those operated by compressed arrand is fully illustrated. The two mest outstanding features of Pneumix agitators are the elimination of ins and explosion hazards on maxing operations, and the variable speeds obtain able through air control. This book let is a companion piece to the E. Iros Air Brush Co., Inc., booklet on spray equipment.

"Alnor Exhaust Pyrometers" is the other Brikerin No. 1819, printed by the Brikerin No. 1819, printed by the Brikerin British B

installed. The constant watch on do sel exhaust temperatures, as well as a safe warsing in advance of troubles due to each ads, fully admistrately, or the each for routing maintenance, gives the operating on given a goods to entirined high officers a goods to entirined high

"Edgewear" Micarta, stern and strat pairings for so ill water craft, is one of Westinghouse Electric Water and Company is new bulleting in the strain Company is new bulleting in the region showing how laminate I Meeta as made, and with a factor simplify indering of standard Edgewear Micartic bearings.

Vacuum Can Company of Chiag . Illusors, her purlished blueprints to a doing problems at "Decentralist of describing in industion of the describing in industion of the plants. A series of blueprint there is no designs of Aer-Vo Describes the users usulated carticle.

and it also reviews the status of natural and synthetic rubber and what has been accomplished to meet the most crucial situation that has ever confronted our nation.

"Allied's Radio Data Handbook," printed by Allied Radio Corporation, Chicago, is a compilation of formulas and data most commonly used in the field of radio and electronics.

Mahr Forging Furnaces, printed by Mahr Manufacturing Co., Minneapolis, Minn., shows various types of forging furnaces and their specifications charted below the illustrations.

"Parker Beading Kit" is the title of a booklet published by Parker Appliance Company, Cleveland, Ohio, which presents with illustrations and descriptive reading matter, the new tool for beading aircraft tubing.

Bulletin A21-643, Parker Rod and Bar Marker, is another appliance product recently published. It illustrates all types of bar markers, the round, the square, the hexagonal, the rectangular, etc., as they come from the machine, marked permanently with any desired symbol.

The Sharples Nozljector and Autojector, printed by The Sharples Corporation, Philadelphia, Pa., contains information on the two types of centrifuge and self-cleaning rotor.

Reliance Prismatic Gage Insert is the title of a booklet on a device developed by Reliance Gauge Column Company, Cleveland, Ohio, to insure better vision and greater safety by the installation of Reliance Prismatic Water Gage Inserts. The booklet illustrates the working principle of the gage glasses, and contains text on the vertical or inclined gages and the Tiltview assembly, with accompanying tables for better description.

Close Tolerance Shape Cutting with the New National JR, printed by National Cylinder Gas Company, Chicago, is a bulletin explaining the easy, quick and economical JR type cutting machine. The machine is fully illustrated and described with accompanying captions

"Rivnuts," a catalog published by B. F. Goodrich Company, contains specifications and charts on this line. The Rivnut is an internally threaded and counterbored tubular rivet that can be headed blind. These nuts are of one-piece construction, anodized and ready for use in the "as received" condition. Primarily, the nut is used as a nut plate for the attachment of de-icers. Other unique adaptations of this product have been made in the aircraft industry.

KEEP POSTED!

New Spring Tester

The P. A. Sturtevant Co., Addison, Illinois, announce a new tool for testing compression springs in sizes to 2½" diameter and 7" in length. This tool not only makes it possible to measure rapidly the recoil pressure of a spring when compressed to any predetermined length, but to match accurately sets of springs (as valve springs for internal combustion engines).

In design and principle, it differs radically from previous spring testers in the following ways: First, it is operated with any accurate standard torque wrench, the wrench not only serving as the operating lever but also providing the measuring element. Second, in this tester a sound device is used to indicate when the spring has been compressed to the test point, thus eliminating the need for the operator's watching multiple dials. Third, compression of spring is against a rigid platform to prevent accumulated errors in reading. Fourth, being a lever-operated, quick-action device that bolts to any bench, it permits general distribution to logical test, check-up and inspection points throughout a plant.

Seamless Steel Tubes

Substitution of hot-finished for cold-drawn seamless steel tubing is recommended by the Seamless Steel Tube Institute as a means of increasing output of tubing to meet the very large demands of essential war needs. This recommendation covers the larger sizes, with heavier walls, which are so often machined. Generally speaking, this will mean tubing of 3" O.D. or larger, depending upon the manufacturer.

Every foot of seamless tubing that can be made and shipped in the hotfinished condition represents an extra foot of tubing that can be cold drawn for aircraft or other war equipment that requires such tubing. Uses for which hot finished can be used in place of cold-drawn include those in which the tubing is machined or in which appearance may be temporarily sacrificed as is being done in the construction of many machine tools.

This problem was recognized by the War Production Board early in the war effort, and as a consequence the Board issued a circular letter to users of seamless steel tubing and emphasized the importance of substituting hot-finished for the colddrawn product. However, as the war effort has increased, this subject has become proportionately more important, and the Institute is endeav oring to promote the idea of making this change. While facilities of tube mills have been tremendously in creased, output is still short of the demand. This situation can be eased by the recommended substitution since it will eliminate the time lost in annealing and heat treating.

MILLION-VOLT X-RAY INSPECTS GIANT SHIP CASTING

A General Electric million-volt industrial X-ray unit being used to study the steel casting for a huge steel stern post befare it is installed on a vessel being built in a West Coast shippard. With the unit, it is possible to take pictures through six inches of steel in a few minutes. Many of the units are used in war plants to check large castings for possible defects before they are installed in vital equipment. Energy equal to \$90,000,000 worth of radium is produced by each of the units.





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Pointing a thousand tons of gun metal with the ease that your neighbor's kid handles his air rifle is an engineering feat in

self. But directing each movement, both horiontal and vertical, so that the projectile pins its nark, miles and miles away, calls for accuracy of ontrols seldom required by industry. It is a tribte to the accuracy and dependability of Ward eonard Motor Controls that our Navy is using so nany Ward Leonard control devices for this and ther vital functions.

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Kaszab marine furniture is built in a modern plant, under rigid production control that guarantees deliveries IN VOLUME AND ON TIME. Constructed to your specifications, Kaszab furniture combines the skill and painstaking care of the cabinet-maker with "know how" gained by building furniture and joiner work for scores of ships of all types: transports, freighters, tug boats and combat vessels.

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"Have three barges we can't launch until you send us two more machines." "Will lose contract if you can't get us more machines in time."

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Shape Molded Bearing Staves

A new process of shape-molding the entire bearing stave to machined dimensions of any length or size makes it possible to furnish marine bearing staves for Navy and marine requirements in accurately-fitted sets requiring no further sizing during installation, according to an announcement by the Gatke Corporation, Chicago, Illinois.

Important performance and installation advantages are claimed for the new bearing staves as a result of constructional improvements resulting from the abandonment of the conventionally employed process of cutting molded bearing staves out of laminated plate stock in favor of molding the entire bearing stave of approved laminated materials in one piece to required size.

Through this new method, machining which roughens the surface and removes the tough outer section of the molded material is eliminated, and the wear area is given an extra degree of compression for higher resistance to wear, while the outer section of the bearing stave is left more resilient to secure high shock absorbing capacity. The hard outer surfaces of the bearing staves, being unbroken by machining, are hermetically sealed against water absorption, thus eliminating all tendency to swell or warp.

In addition to performance advantages, important installation advantages are claimed. Savings in installation time are claimed, as the bearings can be furnished in fitted sets which eliminate the fitting and boring time required for previously available bearings

Six New Reefer Ships

More than 1900 tons of refrigeration will be supplied to nearly 2,000, 000 cubic feet of cargo space when six of the nation's newest and most modern cargo ships are completed at the Gulf Shipbuilding Corp. yards in Chickasaw, Alabama, according to Llewellyn Williams, vice president in charge of Engineering and Production for the York Corporation.

Each of the six new vessels will have three York eight-cylinder "Freon-12" refrigeration machines, six condensers and three brine coolers. They will also be equipped with brine and water pumps to make three complete refrigerating units for the main cargo area. Two four-cylinder compressors, with their condensers and cooling coils, will be used for the ships' stores and special cargo. After the war, the vessels will be operated in the banana trade by their owners. the United Fruit Company.

By dividing the main cargo refrigeration into three separate and independent systems, not interconnected at any point on the refrigerant side, but common on the brine side, engineers have provided for maximum assurance of uninterrupted safe transportation of perishable cargo. All heavy machinery is placed low in the vessels, with the refrigeration condensing system placed in the main ship propulsion engine room and the brine coolers in the propeller shaft space to provide for maximum stability. More than five miles of finned cooling coils in each ship will carry the chilled brine to the refrigerated cargo space.

Monarch Men at War

THE men behind the front in American factories are keeping ings humming with a steady and gantic flow of war products. So any kinds of articles and such untities never have been produced before by any nation.

A single organization, like Monch Forge and Machine works a small part of the Grand Enmble, but it is a vital part. The onarch men you see working in e above picture are putting the hishing touches on reverse shafts r Liberty engines.



Monarch Forge & Machine Works

. W. 21st AND YORK

PORTLAND, OREGON

lew Thermoplastic Coating

An additional development in thertoplastic coatings just announced is
the compound called Amercoat No.
3, for application on metal, concrete
the wood. This product is a liquid
lastic cold-applied by conventional
pray or brush methods. It has an
dvantage in that it may be applied
that any number of coats required for
the particular condition or use.

This compound is a combination f the most inert synthetic resins obainable, and is the result of two ears' development and test in the iboratory and in the field. It has hown excellent performance in such pplications as: lining for storage inks and other equipment to protect oods from contamination by corosion caused by dilute acids or causics; for superstructures, deck me hinery, ventilators and other marine quipment; for concrete urinals, hower bases and laundry trays in deense housing, Army, Nive and air bases, shipyards and factories and or protecting machinery and equipnent in chemical plants, betilities lants, breweries and dairies from

corrosion caused by acids and caus-

American Pipe & Construction Co., Los Angeles.

Brushes for Ring and Commutator Applications

New grades of brushes for ring and commutator applications have been developed for the aviation and else trical industries by Keyst ne Carbon Company, St. Marys, Pa. The designs are made in various grad, so t copper graphite and silver copper graphite created as a part of tiocompany's expanding line of indi culturlly designed an all brushes to meet the demands of tidals serve Certain types v J v 1 p.d sp. ifi for current control application where commence is a comment of the shunts are molded into the brush and perfect conn to lin end in both compile on the a Chillian Accepta

Extrusion Presses

Extruded tubes of open ro, well thickness one product well is the quent readoistments of the learning chinery part to the possite of his m to ters supl a differ the S. Fill mann Ingo may Copyrid to Prograd, Pr. Extrusion pr. h. b. c. the company stellars from the conf. I of supporting the pilitin and conton r Dr err metical permits experience on a contraded to find and other t pay or the sea his a little corner than press to an in the little was the sulpart and a second the product to a series of the consalvage a see on salkthose

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U. S. S. Jenks ready for launching.

Launch of Destroyer Escort Vessel

First of the Navy's new Destroyer Escort Vessels to be launched in the Ohio River slid down the ways at Dravo's Neville Island Shipyards on September 11 at about 4:20 p.m. Invited guests, Dravo employees at the East Shipyard and their families, numbering more than 25,000, witnessed this new milestone in the U. S. Navy's fighter ship program.

Destroyer Escort Vessels, or DE's in naval nomenclature, are lighter than modern destroyers, but have sufficient speed and firepower to make them formidable foes for Axis submarines and competent to protect convoys of precious war supplies

Like destroyers, DE's are named for naval heroes. The one launched at Neville Island on September 11 was christened U.S.S. Jenks for Lieutenant Henry Pease Jenks, who was killed in the battle for the Solomons. Mrs. Maurice L. Jenks, mother of the lieutenant, sponsored the vessel, and had as her aide Mrs. Lawrence T. Haugen, wife of Captain Haugen,

Supervisor of Shipbuilding for Pittsburgh area.

Lieutenant (jg) Henry Pe Jenks, for whom the DE was nan was born in Chicago on May 1914. He graduated from Hamil College in 1936 and later stuc at Cambridge University in E land. Enlisting in the U.S. Na Reserve in 1940, he attained the ra of lieutenant (ig) on June 15, 19 Lieutenant Jenks was killed at torpedo controls on the bridge of U.S.S. Atlanta in the historic m night Battle of the Solomon Islan on November 13, 1942. He has be awarded the Purple Heart Me posthumously, and is entitled to 1 American Defense Service Me and the Asiatic-Pacific Area Ca paign Medal.

The launching ceremony for t day was a double affair, with a Lan ing Ship for Tanks following t Jenks down the Ohio River ways the West Shipyard on the same after noon, sponsored by Mrs. Frederi E. Haeberle, wife of Captain Ha berle, Bureau of Ships, Washingto D. C. Dravo Corporation has bei launching LST vessels since Septer ber 7, 1942. Among the ships th spearheaded the United Nation's vasion of Sicily were Dravo-bu LST'S. Simultaneous with tl launching ceremony of the Jenk Captain L. T. Haugen, U.S.N., St pervisor of Shipbuilding for th area, presented the 3-star Army Navy "E" flag to Dravo, being the third renewal of the first All-Nav "E" award to war industry which was won by Dravo in February 1942. This award signalized the out standing war production job that hi been continuously accomplished b the firm's employees.



The Jenks hits the Ohio River.

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Glued Ship Timbers

Have Arrived

by Carl A. Rishell

The marine industry can be assured that, so far as technical knowledge is concerned, glue laminating of large timbers for marine work is wholly practical. Developments, though they may have seemed slow and uncertain to the industry which urgently needs material, have in reality been very rapid. In 1940 there was only an idea: in 1943 the idea has become an accepted fact, and plants for commercial scale production are on the visible horizon.

Glue laminating means in essence making better big pieces of wood from little ones. While laminating epens vast new fields to wood use, it will mean greater conservation of our wood resources

It has been estimated that only one tree out of 200 in a white oak forest is suitable for ship timbers and only a small part of that choice tree will make bending oak. Glue lamination means that practically any white oak, even comparatively small trees, and the greater part of each can be used to make bent frames

Most boat designs today call for solid lumber difficult to obtain in the quantity and quality and sizes needed In keels, for example, the most desirable timber is one pice from stem to transom, which is not

The office with American force Pro-

easy to come by, if the vessel is larger than a 16-foot rowboat. One-piece keels over 50 feet may be taken only from trees that grow to exceptional size.

Scarfing and mechanical fastening has been, heretofore, the only satisfactory method of producing large keels, longitudinals and other ship timbers, and that entails numerous joints, which are usually weaker than the rest of the piece

Glue laminating has developed to a point where it is possible to build keels or other members of almost any desired length, width, thickness, or shape from relatively small pieces of wood. These timbers possess almost all the desirable features of solid wood, and several added qualities.

The three fundamental structural parts of a vessel—stem, keel and stern post—are now being turned out by lumination in a single prefabricated unit without joints, bolts or other fastenings.

As marine architects and classification bureaus become more familiar with the possibilities of glued, laminated wood members, it may be expected that ship design will trend toward lighter construction.

As laminated timbers are usually built of lumber one inch or thinner, the quality of the material can

Complete stern, keel, horn timber and stern post in laminated white oak at the plant of Gamble Brothers, Inc., Louisville, Ky.

easily be controlled If one of the laminae contains a defect, it may easily be cut out or the entire board discarded without great loss. Certain types of defect are not harmful when properly located, and the boards containing them can be spaced in the laminated member to suit any requirement.

Although waterproof glues have been developed to such a high state of perfection that practically a 100 per cent bond between laminae can be obtained, glued members are so constructed that, with the usual bolting operation performed during the boat-building process, the laminated job would probably be stronger than the scarfed product, even were the glue to fail.

Laminating members for marine construction is a precise and technical process. The equipment is not to be compared with that used for laminating land structures such as columns, trusses, etc. The boards which go into laminated ship members must be planed to such a uniform thickness that the desired finish can only be obtained by the highest type of cabinet surfacing. Clamps, jigs and heating equipment must also be especially designed.

After considerable research and experimental work with resin and urea glues, the investigators turned their attention to the so-called low-temperature phenols, particularly those in which alkali accelerators are used. One of these had been developed to a high state of efficiency, and although the temperatures required to set it were somewhat high, they were still within range of the available equipment

A keel, stem, and horn timber for a medium-sized, heavily-constructed boat were built with this new glue in January, 1943. The glue was set at a temperature of approximately 150 degrees F. Within a few weeks after the keel arrived at the boat yard and had been fayed, slight delamination at some of the glue lines was noted, but this small damage was probably no greater than the normal checking of a solid timber under similar atmospheric conditions. No

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lifficulty was anticipated, and the eel has gone into the water. Laboratory tests determined that

henol glues set at temperatures of

00 degrees F. would provide glue ines as strong as the wood, or having word shear of practically 100 per ent. It is evident, therefore, that he present phenol glues are adejuate for the construction of marine parts, if properly applied and cured. Laminating plants for constructing hip members can be quickly built. n fact, one has already been started, dthough it is not yet in full-scale production. When plants do get nto operation, the available supply of large timbers, bent frames, knees, me-piece shelves and clamps, shaft ogs, horn timbers, and other presently scarce members will be limited only by demand.

New A. C. Welder Line

With a view to expanding its welding equipment service to war industries, Harnischfeger Corporation, Milwaukee, announces the addition of a complete line of industrial a.c. tre welders to its present line of P&H.d.c. machines. Engineered and built

for industrial service, these machines are being made in 7 heavy duty and 4 intermittent duty models, with a range of capacities for handling production welding under continuous operation. The new line features the recently-adopted "WSR" (Welding Service Range) ratings, which show the actual minimum to maximum output of usable welding current. Specific "WSR" ratings of heavy duty models are: 50 to 270 amps., 60 to 375, 90 to 500, 100 to 625, 125 to 750, 150 to 900, and 200 to 1200of intermittent duty models: 20 to 185 amps., 20 to 235, 20 to 285, and 20 to 335. Setting and control of current throughout complete welding service range involves one simple, easy-to-operate adjustment. Improvements in the P&H control over other designs make it creep-proof. According to P&H engineers, the a.c. models are marked by a number of other mechanical and electrical refinements which, by actual field tests, have shown an increase in operating efficiency up to as high as 95 per cent with appreciably reduced maintenance cost.

Paint Hazards Reduced

Fused ceramic coatings on steel have recently been approved by the Bureau of Ships, U. S. Navy. This step is in keeping with the Navy's program to overcome the dangers of flashing and fuming of paint when subjected to the high localized temperatures incident to battle conditions. The new coating, which meets specifications, is marketed by Seaporcel Corporation of Long Island City, New York, and is applied on sheet steel for use as bulkheads and similar parts, providing members with surfaces that are not only lastingly bonded to the metal but do not char, fume, or burst into flames, even under the highest temperatures to which they are likely to be subjected in combat service. Such bulkheads are also being used successfully aboard noncombat or merchant vessels to eliminate repainting and maintenance. The coating is proof against atmospheric destruction and the action of acids, is not affected by steam or vermin, and is easy to clean. The coated steel can be fabricated like plain sheets.

NOVEMBER . 1943

Close-up of two-lane open-mesh steel surface of the bridge. The machine at left is a portable air compressor that pumps air into four lifting pontoons and raises the span above roadway level.



The bridge being raised, with guy ropes attached to slip span from mooring.



Span being swung by guy ropes to allow passage of newly-launched tankers.



Just off the ways, this Army tonker sails past the bridge, towed aside by n crew of two men.

Unusual Shipyard Problem Solved

The Odenbach yards at Greece, New York, were constructed inland on a farm site about 1800 feet from Lake Ontario a year ago. Sufficient lake-front property was at a premium; couldn't be obtained, in fact. But the problem of launching tankers was solved neatly and with dispatch.

The farm abutted Round Pond, which extended near the shipways and some distance towards the lake. Engineers dredged the pond and provided an exit route for the ships, which are being launched today at the rate of one every 12 days. However, Edgemere Drive carried across the newly dredged exit channel. This called for construction of a bridge, a different type of bridge, one that could be put in place in a hurry; would be economical in cost and operation and could be easily moved from its anchorage.

Odenbach engineers went into a huddle, conceived what seemed a "whacky" yet practical idea for a floatable bridge. This is a "pontoon tow" span, 65 feet long and 22 feet wide, with four lifting pontoons, one under each corner, and four outrigger pontoons for stability. The bridge is surfaced with standard Irving openmesh steel decking 2½ inches deep, which saves an estimated 50 tons in weight over corresponding concrete surfacing. Total weight of the span is 75 tons, with a 15-ton-capacity and two-way continuous traffic.

Lifting pontoons are each 25 feet by 10 feet by 6 feet deep, with the outriggers 5 feet by 6 feet by 7 feet. The bridge, which is about 200 feet back from the lake-front, rests on a continuous concrete sill. When a hoat is ready for its shake-down run on Lake Ontario, it is towed down the channel. A portable air compressor of 90-cfm capacity, mounted on a truck, pumps pressured air into the lift pontoons, which forces out the water. The lifting capacity is 120 tons. The span raises several feet above roadway level, and is then swung by two men from the roadway about 50 feet and sidled into a specially-dredged bay. The entire process consumes 20 minutes or less.

The company recently has won fame for its technique of using channel shapes for hull construction, rather than the conventional steel plates. This allows for 90 per cent prefabrication. The yard is specializing on medium-sized tankers that are 80 per cent welded and built in 6 sections; 3 cargo tank sections, a bow section, an engine room section and an after-peak section. Workers put through the complete hull in 11 working days.

These tankers are 180 feet long; 30-foot beam; 13-foot molded depth; have two diesel engines on twinscrews; and are designed for ocean travel. Each tanker can carry 288,000 gallons of gasoline.

Vitreous Glazed Earthenware Grease Interceptor

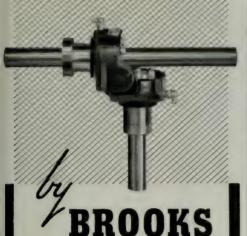
Josam Mfg. Company, Cleveland, Ohio, announces the manufacture of a new type vitreous glazed earthenware grease interceptor, designed similarly to the Series "J" Cascade grease interceptor.

Its use is vital in connection with all restaurants, cafeterias, hotels, hospitals and homes where food is prepared and served and grease is permitted to enter drainage lines.

The use of grease interceptors is particularly important now, since we are in the midst of a world-wide war which will reduce the available supply of fats and oils materially, so that in addition to preventing clogged wastelines and the accompanying inconvenience, annoyance and expense, it is also necessary to develop another source of supply for a considerable part of this vital material.

A large part of grease and fats can be recovered from our wasteage of the billions of pounds now going into the sewer.

The Type VC-2 earthenware interceptor is now available for immediate delivery. Tests have shown it to be equal in every way to the cast iron interceptors.



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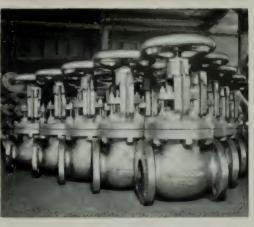
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The G-M Quad Diesel Combination

A new technique of engine combination by which horsepower delivery to a single propeller shaft is increased fourfold with important savings in weight and space is revealed with the disclosure of the existence of a new type of diesel power plant by the Detroit Diesel Engine Division of General Motors Corporation.

The new power plant, in production for several months and being widely used in various landing barges of the United States Navy, is known as the Quad. The basic unit is the Series 71 two-cycle General Motors diesel engine, which before the involvement of the United States in World War II was widely used on American farms, highways, and in

the work of peace-time construction projects. To meet the higher horse-power requirements of war, General Motors, in cooperation with Navy engineers, devised a method of making these engines work in combination, which, despite its simplicity, is one of the unique engineering developments to come out of the war to date.

The Quad consists of four standard six-cylinder General Motors two-cycle diesel engines geared to a common propeller shaft in such a manner that the assembly occupies relatively little space, permitting greater capacity for troops, tanks, vehicles or other cargo. The basic engines are identical with many thousands of the same posdel manufactured by Detroit

Diesel for the smaller landing boats of the Navy and Army, and widely used in tanks, tractors, trucks and stationary and portable power installations. Thousands are in service overseas in these other installations, contributing to wide availability of replacement parts for the Quad.

Cruising range is increased by the flexibility of the engine arrangement coupled with the use of the General Motors controllable pitch propeller. Use of this propeller also eliminates the expenditure of critical materials in such equipment as reduction and reverse gears.

Much of the space economy in the Quad results from the basic design of the Series 71 diesel engine, which permits placing blower, starting motor, generator and other accessories on either side of the engine and rotation of the crankshaft in either direction. By placing accessories on the "out" sides, the engines in each pair in the Quad can be located exceptionally close to each other. These unique design features permit mounting the two pairs of engines in the base in such a way that all four engines are attached to a gear box located centrally; thus the power is geared to the propeller shaft beneath the center of the entire assembly. Controls are located at one side of the centralized gear box.

The gear, clutch, propeller shaft and controllable-pitch propeller are manufactured by Electro-Motive Division of General Motors. Detroit Diesel manufactures the engines and assembles the complete power plant.

A Marine Galley in War Service

The U. S. Coast Guard Cutter Spencer recently sank a U-boat, picking up about 40 members of the crew just before the sub went down. All of these survivors had to be fed by the Spencer, which was equipped with a Hotpoint-Edison galley. How well this galley rose to the occasion is evidenced by a telegram sent to the company, in which it was stated that the electric ovens on the ship were more than equal to the extra load, and functioned in a most satisfactory manner.

Hotpoint - Edison, devoted completely to war production, has built electric galleys for a majority of Navy ships built since the battleship Texas came off the ways with the Navy's first electric galley 30 years ago.

3000-lb. Anchor in War Use

The new ocean going LST's (Landing Ship Tanks) are equipped with 3000 lb Dantorth anchors, which prevent broaching to as the vessel runs ashore through the surf When the landing is completed, the anchor is used to get these vessels off the beach

An ordinary vessel of this size would require a 5000 lb. stockless for routine anchoring; the 3000 lb. Danforth performs this more difficult task astern—a tribute to its remarkable holding power.

The company's anchors in sizes from 30 lb. up are similarly used on invasion craft of every type, from single tank barges, lighters and amphibian jeeps to these large oceangoing LST's. These anchors are available in sizes up to 20,000 lbs.

The 3000-lb. Danforth anchor.







THE U. S. Navy's Armed Guard — navy gunners on merchant ships, have been affectionately dubbed "the Sitting Ducks" by their comrades. But they aren't just sitting ducks as many Nazis and Japs could testify—if they had lived to tell the tale! • Like these naval gunners, Remler Sound Transmitting and Amplifying Systems serve aboard vessels of the merchant fleet, on troop transports and in the Navy. • Remler systems are extremely flexible. Acting as "the Voice" of the ship, they perform a multitude of services at sea or in port and are always on duty for routine or emergency announcements and for alarm and other signals . . . whenever instantaneous communication is necessary.

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side covering of patented process in soluble Aldex assures silky cool non irritating forehead contact. Manage ment also knows that vision is impaired and efficiency hindered by perspiration running into the eyes of workers. Aldex itself and the cellulose fiber filler within the band absorb perspiration immediately on contact. Bands fit any size head, and are so constructed that shape is maintained even when completely saturated. They are manufactured by Aldine Paper Company, New York City.

Pneumatic Hand Sander

Designed and built for all practical hand-sanding and finishing operations, the Sundstrand sander, manufactured by Sundstrand Machine Tool Company, Rockford, Illinois, is now available in a lightweight, highspeed Model 1000.

This smaller and lighter machine weighs less than 6 pounds, has a speed of 3500 oscillations per minute, and can be equipped with different

types of sandpaper attachments for large or small, wide or narrow, flat or curved abrading surfaces on metal, wood, plastics, or composition.

Operation of the machine is obtained with pad movements started and controlled by a palm lever fitted at top of the machine housing. No turning of "on" or "off" switches is required. When the machine is gripped to operate, the reciprocating action of the pads starts. Upon release, the machine automatically stops.

Pneumatic hand sander.



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Hardening 35 Different Parts on One Machine

At least 50 per cent of the time formerly required to harden a wide variety of diesel engine parts is now being saved at The Cooper-Bessemer Corporation, according to T. E. Eagan, chief metallurgist for this diesel, gas engine and compressor builder of Mount Vernon, Ohio, and Grove City, Pa.

In commenting on the progressive steps the company has taken, which enabled it to double business volume in the past year, he was enthusiastic over the additional savings in time and materials that are being effected with the recently-installed machine for heating and hardening by electrical induction.

Mr. Eagan demonstrated how 35 separate parts, ranging from 7/16 inch bolts to large diesel wrist pins over 6 inches in diameter and up to 181/4 inches in length, were accurately hardened to the desired degree and depth in less than half the time formerly required when the entire parts were carburized.

The simplicity of the process was demonstrated by him. He placed a crankshaft for a diesel fuel pump into place on the machine. By pressing a button, the selected bearing surfaces of the crankshaft became redhot within a few seconds, and jets of water automatically sprayed the heated areas, thus quenching and completing the hardening operation.

By changing the fixtures and induction coils, many of which are designed and built in the plant, the machine is prepared to accommodate

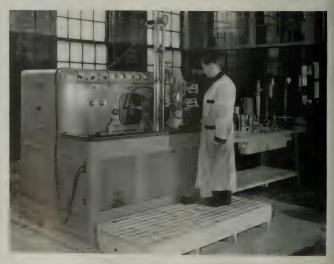
any one of the 35 items hardened in this way, which include such parts as gears, cams, wrist pins and ball races.

In hardening wrist pins, for example, an automatic, hydraulicallyoperated fixture is installed which feeds the pin through the induction coils at a controlled speed so that the entire length of the wrist pin is heated to the desired temperature and quenched in one continuous operation, as shown in the accompanying photograph.

"Hardening time for a wrist pin," said Mr. Eagan, "is now reduced to 38 seconds. This process not only completes the work in seconds instead of hours, but also reduces distortion to a minimum and saves critical material by permitting us to use a carbon steel in place of high alloy steel formerly used."

Many of the parts hardened by this modern process are being installed in the company's diesel engines, which are used for propulsion, and in diesel engine auxiliary generator sets for supplying power on many of the cargo and fighting ships of the United Nations and for other vital war equipment.

Wrist pin being heated by electrical induction process at Cooper-Bessemer's Grove City, Pa., plant. The entire circumference and length is hardened in 38 seconds. Some of the 35 parts hardened in this unit are shown on the bench at the right.





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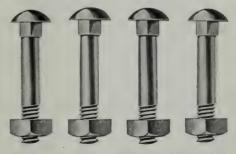
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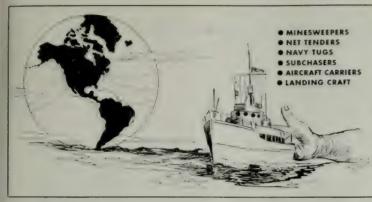
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William I. Selover, manager of the Los Angeles District Office of the Sperry Gyroscope Company, now wears upon his lapel a gold pin studded with a diamond and rubies, signalizing 30 years of work and adventure with the company.

The presentation was made by R. E. Gillmor, Sperry Gyroscope president, in the huge Nassau war plant, while veteran associates of Mr. Selover, including Vice President Robert B. Lea, gathered to congratulate him. A dinner followed at the plant's Guest House.

Mr. Selover is a native of Cortland, the same upstate New York town where Dr. Elmer A. Sperry was born. Three years after he had founded the company, Dr. Sperry persuaded his youthful fellow townsman, who had been at sea as a wireless operator, to join the small group then engaged with him in developing the original Sperry Gyro-Compass.

Boiler Water Control

Provision is being made for a phosphate control test in the new U. S. Maritime Commission specifications for boiler water test kits on Liberty vessels as well as on the higher pressure Victory ships. This will permit the control of phosphate conditioning in the manner pioneered in the marine field by Bull & Roberts, consulting chemists of New York.

These methods, which are now in successful use on some 750 vessels operating under service contracts with Bull & Roberts and their representatives, were described in detail in a paper on "Water Conditioning and Related Problems of Marine Boiler Operation," which was presented before the November, 1933.

meeting of the Society of Naval Architects and Marine Engineers, Recognition of the desirability of a phosphate test in these new specifications confirms the soundness of Hall System theory and its years of successful practical application in marine boiler operation.

STATEMENT OF THE OWNERSHIP, MAN-AGEMENT, CIRCULATION, ETC. RE-OUIRED BY THE ACTS OF CONGESS OF AUGUST 24, 1912, AND MARCH 3, 1933. Of PACIFIC MARINE REVIEW, published monthly at San Francisco, California, for October 1, 1943, State of California, Country of San Francisco. Before me, a notary in and for the State and country directs, personally appeared BERNARD N DeROCHIE, who, having been duly sworn according to law, depress and says that he is the Businand that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, 10 with means addresses of the publisher.

form to wit:

1. That the names and addresses of the publisher,
and business managers are

That the names and addresses of the publisher, cuttor, managing editor, and business managers ate: Publisher, JAMES S. HINES, 500 Sansome St., San Francisco.

Editor, ALEX J. DICKIE, 500 Sansome St., San Francisco.

Managing Editor ——.
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B. N. Derocchief.

B. N. DEROCHIE,
Business Manager,
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SEAL) Notary Public in and for the City and Country of San Francisco, State of California (My commission expires December 23, 1944.)

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Sea Rescue Lamp

A midget searchlight only as big as a walnut yet so powerful it will project a 1500-candle-power beam visible for 60 nautical miles has been designed by Westinghouse engineers to aid the rescue of aviators forced down at sea.

The new lamp provides the most powerful beam ever obtained from such a tiny incandescent unit. It was designed at the request of the Navy.

Packed with the rubber life rafts with which all ocean-flying military aircraft now are equipped, one of the



This midget searchlight built into a bulb no larger than a walnut has been developed in the Westinghouse lamp laboratories to aid the receive of evilators forced down at sea.

tiny lamps will be worn by each man of a plane crew forced down at sea. The lights fit on a band around the head, like a miner's cap, so the man can have both hands free to hold on in rough weather.

With life rafts now radio-equipped, fliers adrift at sea can call for help over a distance of some 400 miles. When at night a ship follows the radio signal, the new sea rescue lamps will reveal the raft's exact position.

By following an S.O.S. signal to within a dozen miles, a ship has done an accurate job and then must depend to a large extent upon some visible signal. Signal flares can be used up too quickly, so this sea rescue lamp has been designed to meet the need for a constant and powerful light source.

The six-watt lamps will be wired to a small hand-cranked generator which is included in the raft equipment to supply power for the radio. They also can be flashed as signal lamps by means of a "trigger switch."

One half of the lamp bulb is silvered to provide a reflector. The lamp thus becomes a complete optical package in itself and requires no metal reflector or glass lens. An ordinary six-watt lamp diffuses its light in all directions, whereas this lamp projects a beam that belies its size.

Modern Frigate and Submarine Chaser Launched

Leathern D Smith Shipbuilding Company held a double launching on October 2 This was the third such occasion in less than two months at this Great Lakes shippard.

Departing from the customary tradition of christening with champagne, the sleek warship, U. S. S. Peoria, was launched with water from the Illinois River; however, it was noticeable that the usual spray of foam, mevitable when champagne is used, was lacking when the sponsor, Mrs. Victor C. Reynolds, smashed the bottle against the knife-like bow.

The submarine chaser PC-1178 was launched from shipways at the far end of the yard and christened by Miss Elsie Krause, yard welder employed on the construction of the submarine chasers. Both vessels were launched sidewise.



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- 10. Sheave Rope Right.
- 11. Reverse Ends.
- 12. Don't Lubricate Your Rope.
- 13. Avoid Unnecessary Wear and Abrasion.
- 14. Splice Rope to Prolong Service.

... Save Rope and you save LIVES!

This month, at the request of the War Production Board, a national campaign is being launched by America's rope manufacturers to impress on rope users the importance of conserving this vital product.

Every bit of rope-making fiber that can be saved must be earmarked for the all important job of winning the war. If, through better care and handling, all rope now in use can be made to last even ten per cent longer, it would add the equivalent of approximately twenty million pounds of fiber to the supply!

Tubbs and Portland Cordage Companies urge rope users in the marine field to do their part in making this campaign a success. Write or phone for free rope conservation booklets, "The Rope You Save Fights for You" and "14 Ways to Make Rope Last Longer," and for illustrated rope conservation wall chart.

Send for your copy of this booklet and for ther repe conservamaterial.

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often with the National Rope Conservation Campaign as requested by the War Production Bost

Pacific IMARINE REVIEW

Our Cover

The cover illustration this month shows U.S.S. AP 120, christened Admiral W. S. Benson, on her way into the Calland estuary on November 28, 1943, at the Alamada Shipyard of the Bethlehem Steel Co. Shipbuilding Division. Admiral W. S. Benson is the largest merchant type vessel ever launched on the Pacific Coast.



Official Organ

Pacific American Steamship Association

Shipowners Association of the Pacific Coast

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Pacific IMARINE REVIEW

Two Significant Events

During November, the San Francisco Bay area witnessed two events of particular maritime significance.

The first of these was the election by an overwhelming majority of Roger Lapham as mayor of San Francisco. This election indicates serious thought on the part of the voters. The campaign was bitter, with five candidates in the field and all impartial observers giving the incumbent the best chance to win. Mr. Lapham, promising only a clean business administration, confessed his ignorance of politics, and won votes by the evident sincerity of his purpose to keep his single promise.

Back of the mayor-elect is a long story of successful management in the intercoastal and offshore steamship business. Building up the business has been his constant aim, and under his guidance the American-Hawaiian Steamship Company has developed into one of the most successful and best established shipping firms in America. Roger Lapham retired as chairman of the board of this firm to take over the mayor's office at San Francisco. A shipping executive of such ripe experience will be of great help in steering this shipping metropolis through the reefs and shoals of the readjustment period following the war.

The second event in which we see significance for the future was the November launching at the Alameda plant of the Shipbuilding Division of the Bethlehem Steel Company. The vessel launched is the largest mer-

chant ship hull over launched on the Pacific Ocean. Since she is to be a troop carrier for the U. S. Army, none of her characteristics may be published. However, she is larger than any vessel that operated regu-

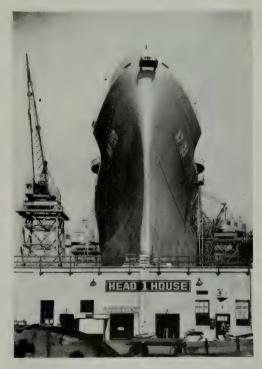
larly out of San Francisco in normal times, and is so designed that she can be converted into a de luxe passenger liner without major structural or machinery alterations.

The yard in which this vessel and other identical hulls are being built is a permanent yard and will be ready to build more ships of this character when the war is over.

So here we have San Francisco with an executive who knows shipping, and San Francisco Bay launching the finest ships. Two complementary events which augur well for the maritime future of the San Francisco Bay area.

LARGEST PACIFIC COAST SHIP

The U. S. S. Admiral W. S. Benson, one of the new, speedy troopships, shown on the ways of Bethlehem-Alameda Shipyard, Inc., at Alameda, rates as the largest ship ever built on the Pacific Coast. She was launched on Novem-





Ready for her first journey, this Vancouver-built 10,000-ton ship loads Canadian lumber. In her hull alone are 3000 tons of steel plates and shapes, held together by 400,000 rivets. Many component firms contributing to this ship can claim credit along with the yard for her building.

Shipbuilding in Canada

back, we have heard many American marine men asking the question, "What is Canada doing in the war shipbuilding effort?" A recent report by the Hon. C. D. Howe, Minister of Munitions and Supply, to the House of Commons, Ottawa, partially answers this question.

This report asserts that during the two decades immediately preceding this war, Canadian shipyards had not built one seagoing merchant vessel, and that today there are 12 shipyards

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employing 43,000 men working at cargo ship production. As of June 1, 1943, these yards had launched 164 cargo vessels of 10,000-deadweightton capacity and four cargo vessels of 4700-deadweight ton capacity. Of these, 141 ships had been delivered as of that date.

The total projected cargo vessel program calls for 270 ships of 10,000 deadweight tons and 30 ships of 4700 deadweight tons, a very respectable aggregate of 300 merchant ships with

(All photos courtesy The National Film Board)



George Parker, formerly a violin and gultar maker, now turns out steering wheels for ships. These are made of teak or walnut, consist of 50 various wood components. The plant, in Owen Sound, makes furniture in peace times.

a total deadweight capacity of 3,000,000 tons.

The shipyards of Canada, in addition to this cargo vessel program, have a large naval program, which by June 1, 1943, had produced 221 of the famous escort vessels that were so efficient in the "Battle of the Atlantic" on anti-submarine duty.

The 10,000-ton cargo carrier being built in Canadian yards is the ship design developed by British shipping authorities and known as the "North Sands" type. It is identical with the ships built for British account by the Richmond No. 1 shipyard, and formed the basis for the design of the American "Liberty" type. This type was chosen because it was suited to mass production in many shops and yards, and because its engines and boilers were simple and were familiar to all operating personnel and to repair and maintenance mechanics in all parts of the world. This type day forms the great majorit cargo vessel output of t of the world.

As Mr. Howe indicate

Propellers for freights or a line of our own Sound foundry while the out of the proper for every line or out of the proper for every line of the proper is under way in the patrice.





will maintain 11 knots average at sea fully loaded with 2500 ihp on her reciprocating steam engine. Just as with our "Liberty" type, the Canadian "North Sands" ship frequently makes 14 knots speed on trials in calm weather.

To drive this ship at 18 knots would require a power plant of 11,000 horsepower, and such a plant would greatly reduce the cargo-carrying capacity and increase the initial and the operating and maintenance costs. The speed of a convoy at sea is less than 11 knots average, so this standard cargo carrier is ideal for war work.

A number of the Canadian "North Sands" ships have been built as oil burners, and these the Canadians have called "Victory" ships.

In addition to this new construction, Canadian shipyards in the first three years of this war repaired, reconditioned or rebuilt 5000 merchant

(Page 104, please)

Left: A Vancouver plant makes the anchor chains for Canadian-type Liberty ships. Each weighs 50,000 pounds, is almost a quarter of a mile long. The factory turns them out on electro-weld production line, the only one of its kind in the Empire.

Below, left: From Calgary come the freighters' storm valves. There are 600 types of valves in the ships, plus 25 tons of copper wire, 2½ miles of steel cables and 110 tons of piping and tubing, Right: Compasses and binnacles come from Ottawa.



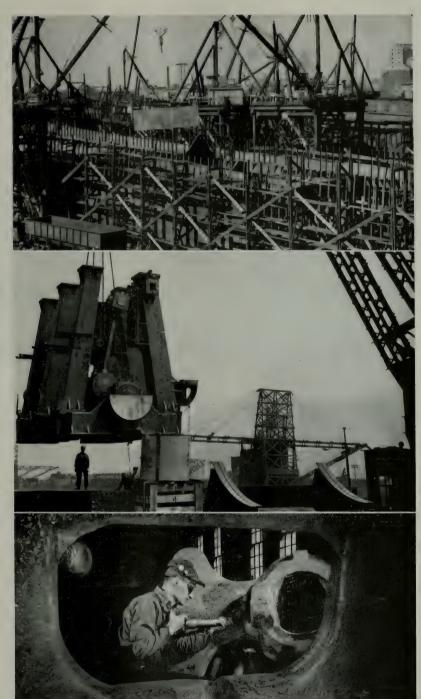


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In 12 huge Canadian shipyeards, some of which did not exist before the war, close to 50,000 workers are engaged in building merchant ships for the battle of supplies. All but e few of these are of the 10,000-ton close, and over 225 have been launched. The illustration shows the record - breaking United Shipyards, in Montreal, whence come 427 - foot ships similar to U. S. Libertys.

A crane lowers a monster engine into the hull of a 10,000-ton ship. Heavy machinery manutacturing firms in several cities are turning out these super engines. As there are millions of parts in a ship, procurement problems are innumerable.

Freighters get their big anchors, two to a ship, from Winnipeg.





O IMPORTANT is "chow" to the success of naval operations that food for men at sea is a major consideration in outfitting a ship. Proper balance of diet and adequate quantities of food for long voyages are necessary if seamen are to maintain full effectiveness. To insure nutritious menus it is not only necessary to select the proper kinds and amounts of meats, fruits, vegetables and dairy products when stocking the ship, but a means for keeping the food products in good condition must be available. The established means of maintaining temperatures required for food preservation is mechanical refrigeration.

Refrigerating machines on ships have long been recognized as a necessity. With out fast-expanding Navy, the number of refrigerating units is multiplying with each new ship that slips down the way. With the increase in number of units is added a new importance to the perfect performance and reliability in operation of the refrigerating system on each ship. Larger crews are aboard, sol-

The author is manager of the International Divi-

by William G. Hillen

diers in transport are often the passengers, and extra people may be present due to the heavy traffic to and from overseas posts during the war. The ships' stores must supply food for all aboard, and this cannot be done if the products spoil, shrink, or become unpalatable from lack of refrigeration. Just as food is important for victory, so is mechanical refrigeration important, for it means the preservation of food.

Accompanying the increased number of ships and the greater emphasis on the importance of food preservation is the need for more men trained to operate, maintain and service marine refrigerating equipment. Time does not permit the training to be obtained on shipboard—the person in charge of the refrigerating system must know his job when assigned to duty. His training is obtained on land, and in these times in an accelerated course of study designed especially for his needs.

Today Navy men who are to take control of the refrigerating systems on ships are attending school on land. Many are using in classes duplicates of refrigerating systems that they will later operate on battleships, cruisers, destroyers and other fighting ships of the U. S. Navy.

A refrigerating school for men in the Navy is being conducted at the Carrier Corporation plant in Syracuse, New York. Training is not limited to operation, maintenance and repair of refrigerating equipment, but includes basic technical instructions on the theory of refrigeration and low-temperature air conditioning.

The Faculty

The course given is designed to produce specific results. The curriculum is one which incorporates part of the course of study given engineers who joined Carrier Corporation in peace times and much of the training given to personnel of the company participating in repair and maintenance work, all conforming with standards set up by the Navy.

The faculty consists of five men from the United States Navy and three men from Carrier Corporation. The Navy representatives are: An ensign, in charge of school, as representative of the Navy, who has had 16 years of service in the Navy, 13 of these on sea duty, in battleships,

ON THE FACING PAGE
Meintenance and repair of refrigerating
machinery.

destroyers and mine sweepers, a machinist mate, First Class, assistant to the ensign, who has had nine years' Navy service, one of them on a battleship, the other years on submarines; three machinist mates who

serve as assistants.

The Carrier Corporation representatives are: The writer, who acts as dean of the school, and who has had charge of the Training School provided engineers entering the employ of the corporation during peace times; H R Jaeggli, director of the Service Department, who serves as an advisor to the faculty; C. O. Bar

rett, representing Carrier as director of the school.

The students of the school are those who have completed their boot training and enter the special course for refrigeration as machinist mates

Class studying heat flow.

or firemen. They are selected for the special training prior to entering the school.

Curriculum

The curriculum is divided into four classes that somewhat parallel the college freshman, sophomore, junior and senior set-up. At the beginning of the freshman period, the purpose of the course is outlined and information is given students concerning housing, recreation, food rationing, and the conduct expected of them. The regulations that must be followed when attending classes held in rooms in a war plant are explained. A textbook, which is a complete manual on the refrigerating equipment for the preservation of foods on ships, is given each student.

The freshman class instructions pertain to theory of refrigeration and low-temperature air conditioning. Subjects under discussion include the flow of heat, kinds of heat (sensible and latent), measure of heat, and an explanation of heat as a form of energy. The theory of refrigeration

Explaining the mechanism of refrigeration.







Assembling Compressors

with the cycle of operation illustrated by an animated design, means of estimating the heat load that must be carried by the refrigerating unit, and the function of each part of a refrigerating unit, are given in detail. When the first, or freshman, class is completed, each Navy man in the class has a basic knowledge of refrigeration. Oral quizzes with open discussion bring out points that need to be emphasized.

The second part, or sophomore course, is concentrated on what an engineering college specifies as "shop classes." It is a tear-down and rebuild program in which each member of the class participates. The class is divided into groups of three men each. The groups are rotated so that each spends one day tearing down and rebuilding an assembly. As each piece is removed from a refrigerating compressor, ice maker, or control equipment, its function is described by an instructor. Special features are pointed out. The parts are then reassembled and put in operating condition by the students. The procedure permits each person to become thoroughly familiar with all the equipment, its function, and how it fits into the whole system. When each group has torn down and rebuilt the various assemblies, reviews and oral examinations are given to make sure that all present are ready for the next course

Maintenance and repair are the major subjects for the junior period.

The first day is spent on detail study of intricate controls. Each student actually makes adjustments and practices servicing these delicate instruments on which continuous operation of equipment depends so much. On the second day, refrigerating piping is given detailed attention, with discussions held on materials, fittings, valves and joints that are standard parts of the system. Again the class is divided into groups for shop practice in making up flared and soldered connections and various types of joints. With the same attention to details as well as to the overall picture, the Navy type condenser, the compressor motor, seal assemblies and various parts are described, worked with, serviced and repaired. Each student participates in all demonstrations. He removes and adds oil, checks discharge valve, seal assembly, pressure relief valve and drive belts. He removes and charges refrigerant, cleans tubes, purges air from lines, changes cartridge in expansion valves, tests for leaks, sets controls and performs all the operations that a maintenance and repair engineer does.

The senior class concentrates on operation and trouble-shooting. Operating practices, defrosting and practical methods in trouble-shooting are set forth. Each student draws a piping diagram of the complete refrigerating system to use when looking for trouble. The various parts of the system and the functions of each are reviewed with emphasis on possible

causes of trouble. After class discussion and demonstrations, a troubleshooting schedule is set up. Various parts of the machine are "tampered with," and the student must locate the trouble and cure it. Plugged inlet water strainers and liquid line valves. shortage or overcharge of refrigerant. faulty valves, blown fuses, dirty contact points, expansion valve inoperative and other troubles are put into the system by the instructor. Locating and eliminating the trouble by the student serve as a final examination, to which the last four days of the course are devoted.

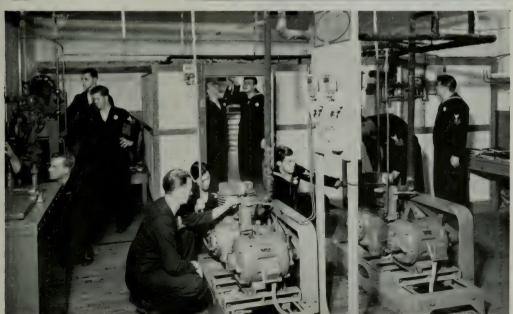
Upon completing the Navy Training School at Carrier Corporation, each student is given a certificate. It is believed that the certificates will serve as credentials when the men return to civilian life and are applying for a position in the refrigerating

In addition to planning the course, there was much to be done in founding the school. Special classrooms were built so that the men in training would have quiet and restricted quarters. The test equipment, composed of refrigerating machines typical of those used on many ships, was installed for class or laboratory study. The classrooms were air conditioned so that there would be no seasonal lag in learning due to the enervating effects of hot weather. So successful is the course of study, and so practical is the set-up to study operation, maintenance and servicing of refrigerating systems that a second school is to be held for evening classes. The students will be commissioned officers of the Navy who, during the daytime, are attending another school operated by another industrial plant located in Syracuse.

The training course at Carrier on the operation, maintenance and servicing of refrigerating equipment on ships provides the Navy men first-hand with the complete information needed to take charge of a refrigerating plant. Housing conditions and recreation facilities for the after-school hours are such as to be conducive to an enjoyable and happy time. The entire program is one in which the corporation is proud to have a part.



Below: Testing complete refrigerating units.





WINGS for WAR CARGO

war · urgent supply services have boosted transoceanic flying to undreamed of records is graphically indicated by the arrival at an unnamed East Coast port on November 17, in the early dawn, of the huge four-engined flying transport which marks completion of 5000 transoceanic crossings made by flight crews of the Pan American Airways System since Pearl Harbor.

In releasing the world-record figures, Pan American officials emphasized that, while this record for actual flights across the oceans is unique in the history of world airlines, it represents only part of the war trans-(Photos courtesy Pan American Aircays System) port flying being done and the records being broken every day by the Air Transport Command of the U. S. Army Air Forces and the Naval Air Transport Service, for which Pan American Airways and the domestic airlines operate war cargo routes under contract.

The record, which multiplies many times the total transoceanic flying done by all the airlines of the world before the war, includes 2733 crossings of the Atlantic Ocean in the service of the Army Air Transport Command and 481 other Atlantic crossings for the Naval Air Transport Service and by the Clippers on their regularly scheduled commercial runs between the United States, Europe,

and the British Isles; 1221 crossings of the North Pacific between the Hawaiian Islands and the mainland, including both Clipper schedules and crossings made with the naval transport aircraft operated for the Naval Air Transport Service; 520 flights for the Naval Air Transport Service across the long run to the South Pacific war theater; and special war mission flights.

Pan American flight crews have run up a record of more than 21 million miles of over-ocean flying during this same period, and have flown some 100 million ton miles of war cargo to overseas destinations in the services performed for the military departments.

Important Passengers Carried

Pan American flight crews have flown important Government and military leaders representing every one of the 33 United Nations and the neutral countries of the world who have come to the United States for important conferences since the outbreak of the war

Among the more notable are: President Roosevelt, who was flown by Clipper to and from Africa at the time of the Casablanca war conference: Prime Minister Churchill, en route back to London after his first war-meeting with President Roosevelt in Washington; the New Zealand Prime Minister, Peter Fraser: Oueen Wilhelmina of the Netherlands; Prince Olav of Norway; King George of Greece; Secretary of the Navy Frank Knox; Secretary of the Treasury Henry Morgenthau, Jr; Harry Hopkins; W. Averill Harriman; Donald Nelson; Wendell Willkie; General George C. Marshall, Chief of Staff, United States Army; Admiral Ernest King, Commander in-Chief, U. S. Fleet and Chief of Naval Operations; General H. H. Arnold, Commanding General of the U. S. Army Air Forces; Admiral Chester Nimitz, Commander-in-Chief of the U. S. Pacific Fleet; Admiral Harold Stark, Commander-in-Chief of the U. S. Atlantic Fleet; Lt.-General George S. Patton; Lt. General Carl Spaatz, Lt.-General Ira C Eaker, Lt General Joseph E Still well, Chief of Staff of China's Armies: Major General Clure E Chennault, Commanding General of the 14th Air Force, China; and many others

Clippers in War Early

Pan American Clippers have been in wartime transoceanic service continually since the first bomb dropped on Pearl Harbor. On the Pacific, four Clippers were caught in areas under attack by the Japs. Recalled to the mainland to undertake important transport missions, a schedule out of San Francisco for Honolulu was completed on December 12, just five days after the Pearl Harbor attack.

The Philippine Clipper, en route to Guam when the Japs attacked, returned to Wake Island to undertake a patrol flight for the Marine Commandant there. Caught by the Japs, the Clipper stayed on at Wake to evacuate civilian personnel. With 23 bullet holes made by Japanese machine gunners, and narrowly missed by a bomb which destroyed her dock, the Clipper returned to Midway Island and Pearl Harbor en route back to San Francisco, where her captain delivered the first eye-witness intelligence reports of the at

tacks on Midway and Pearl Harbor. The Hong Kong Chipper was destroyed in the attack on Hong Kong The Pacific Clipper, caught in the South Pacific, flew home around the world from New Zealand to avoid the Japanese-held islands on the pre-war South Pacific route. All bases in the Pacific and all Clippers and flight crews were put at the command of the U. S. Navy immediately.

On the Atlantic the Clippers never missed a schedule on the routes linking the United States and Europe, and on both oceans Pan American Airways teamed up the Army and Navy for the rapid movement of personnel and material in their forceddraft extension of their air transport networks to far overseas points. While routes and schedules of these military services are carefully guarded military services, they now serve every fighting front, with the exception of Russia, and even the Russian front is served indirectly.

War Service Eclipses Peacetime Totals

In addition to the flying for the military services, Pan American maintains the "essential civil air transport services." carrying high priority mails, passengers and cargo between

(Page 104, please)





Celebrates Fiftieth

SOCIETY OF NAVAL ARCHITECTS AND

John Farrell Metten, president Society of Naval Architects and Marine Engineers and chairman of New York Shipbuilding Corporation.

The Society of Naval Architects and Marine Engineers celebrated its Fiftieth Anniversary in connection with the Fifty-first Annual Meeting of the Society at the Waldorf-Astoria Hotel, New York, on November 11-12.

The Society was founded in 1893 by a group of American naval officers connected with the Bureau of Construction and Repair of the Navy, most of whom eventually became chiefs of the bureau with the rank of rear admiral.

Beginning with a small initial membership, which has gradually grown through the years until, with the commemoration of its Fiftieth Anniversary, the Society has a membership of 3200; is branching out with metropolitan sections in two cities with regular monthly meetings; and, through its technical papers presented by members, visitors and guests at the annual meetings and other gatherings, its publication of the Transactions, as well as engineering and other books, has stimulated the professions of naval architecture and marine engineering and has made a permanent record of the progressive advancement in the arts of ship construction and machinery design.

The principal emphasis this anniversary year was placed upon historical papers showing the great

changes that have taken place in connection with shipbuilding and naval construction during the past half century, though several papers were presented during the technical sessions on ship design and engineering.

The historical papers, prepared by members long associated with the Society, cover practically every phase of shipbuilding and naval construction in America for the past five decades and constitute a historical record of unusual interest.

The first session of the annual meeting opened at 9:30 in the morning of November 11 in the Jade Room of the Waldorf-Astoria with the annual address of John F. Metten, chairman of the board of the New York Shipbuilding Corporation and president of the Society. Next came the presentation of two technical papers, "Determination of Torsional Oscillations of Ship Drives by Network Analyzer," Charles Concordia; and the second, "The Design of Constant and Variable Capacity Mechanical Oil Atomizers," J. F. Harvey and A. W. Hermandorfer.

The first group of eleven historical papers covered monographs of the United States Navy yards. Rear Admiral George H. Rock (CC), U.S.N. (retired), presided. The papers were "Boston," by Rear Admiral W. T. Tarrant, U.S.N.; "Cavite," by Lt.

(jg) R. J. Davis, D-V (S-U.S.N.R.); "Charleston," by W. M. Sanders; "Mare Island," by Harold W. Linnehan; "New York," by James H. West; "Norfolk," by Rear Admiral H. M. Simmons, U.S.N.; "Pearl Harbor," by Captain Paul A. Stevens, U.S.N.; "Portsmouth," by Rear Admiral John G. Tawresey (CC), U.S. N. (retired); "Puget Sound," by Rear Admiral C. S. Freeman; "Philadelphia" and "Washington, D. C."

At 2:00 p.m. the same afternoon, one technical paper was presented, entitled "A Longitudinal Flotation Diagram," by Lt. J. W. Kennicott, CC-V (S), U.S.N.R. This was followed by a group of seven historical papers on special types of vessels under the chairmanship of Edgar P. Trask. These papers were: "The Pacific Coast Schooners," by David W. Dickie; "Early American Steamship Lines," by Frank J. Taylor; "American Merchant Steamships," by Cedric Ridgely-Nevitt; "U. S. Coastwise Steamers," by E. H. Rigg and A. J. Dickie; "The Development of Steam Navigation on Long Island Sound," by J. Howland Gardner; "History of Tankers," by Hugo P. Frear; and "Outstanding New England Types of Fishing Boats, Whalers and Yachts," by Prof. George Owen.

Then came a group of ten monographs of shipyards under the chairmanship of H. Gerrish Smith. The titles of these papers were: "Bath Iron Works Corporation." by W. S. Newell: "Bethlehem Shipyard at Quincy," by Arthur B. Homer; "Bethlehem's Wilmington Plant, Formerly Harlan & Hollingsworth Corporation," by W. H. Collins; "Cramp's Shipyard," by Wm. D. Perrott; "The Newport News Shipbuilding and Dry Dock Company," by Homer L. Ferguson; "The New York Shipbuilding Corporation," by

Anniversary

MARINE ENGINEERS RECORDS PROGRESS

J. F. Metten; "Puscy & Jones Corporation," by Andrew G. Spiegelhalter; "The Roach Yard," by W. P. Stephens and J. L. Bogert; "The Sun Shipbuilding & Dry Dock Company," by Robert Haig; and "Union Iron Works," by Hugo P. Frear.

On November 12, at 9:30 a.m., one technical paper, entitled "Recent Developments in Feed-Water Filtration for Marine Use," was presented by Arthur C. Rohn, followed by a group of six historical papers on naval vessels and the Navy Department under the chairmanship of Commander H. E. Rossell, (CC) U.S.N., (retired). These papers were: "The Organization of the Navy Department," by Rear Admiral George H. Rock, (CC) U.S.N. (retired). "Types of Naval Ships," by Commander H. E. Rossell, (CC) U.S.N. (retired); "Monitor-Class Warships of the U. S. Navy," by Lt. (jg) A. C. Brown, U.S.N.R.; "Revenue Cutters, Coast Guard Ships and Lightships," by Commander F. A. Hunnewell, U.S. C.G., (retired); "Development of Submarine in the United States," by Captain A. I. McKee, U.S.N.; and "Torpedo Boats and Destroyers," by Hugo P. Frear and W. S. Newell,

Then, under the chairmanship of J. F. Nichols, historical papers as follows: "History of the Great Lakes and Lakes Shipping," by J. C. Workman; "Development of Transportation on the North Pacific Ocean," by A. F. Pillsbury; "Water Transportation on Inland Rivers," by V. B. Edwards and Fred C. Cole; "Ferry Boats," by Eads Johnson; and "History of United States Navigation and Vessel Inspection Laws," by Captain H. S. Shepheard, U.S.C.G.R.

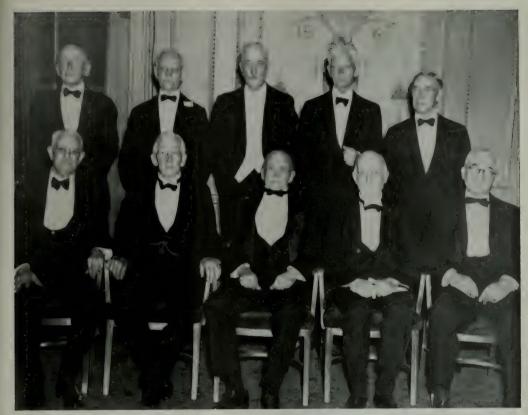
At 2:00 p.m. came: the presentation of one technical paper, entitled "Marine Applications of Gas Turbines," by Professor C. Richard SoWilliam Hovgaard, Professor Emeritus, Massachusetts Institute of Technology, who was awarded the David W. Taylor
Medal, highest award of
the Society of Naval Architects and Marine Engineers. The presentation
took place on November
12.



The David W. Taylor medal.
(Ben Fasman Photos, N. Y. C.)







Above: Ten of the surviving 50-year members of the Society. Top row, left to right: Lawrence Y. Spear, Joshua W. Atlee, James Swan, Rear Admiral George H. Rock, U.S.N. (Ret.); H. Gerrish Smith. Seated, left to right: Edwin B. Stadler, W. P. Stephens, Hugo P. Frear, Prof. William F. Durand, Homer L. Ferguson.

Right: J. Howland Gardner, past president of the Society; David Arnott, vice president and chief surveyor of the American Bureau of Shipping and president of the American Welding Society; William Bennett, principal surveyor for the United States and Canada, Lloyds Register of Shipping; and H. H. Henline.

(Photos Ben Fasman, N. Y. C.)

derberg and Ronald B. Smith; and the reading of a group of seven historical papers under chairmanship of E. H. Rigg, as follows: "Development of Design," by J. L. Bates; "Development of Marine Engineering," by J. F. Nichols; "Development and Use of Steel in Shipbuilding," by E. F. Kenny; "Development in Shipbuilding," by H. F. Norton; "The Development of Marine Water Tube Boilers," by J. H. King and R. S. Cox; "American Bureau of Ship





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ping," by J. L. Luckenbach; and "The Formation of The Society of Naval Architects and Marine Engineers," by Rear Admiral W. P. Robert, (CC) U.S.N., (retired).

(CC) U.S.N., (retired).

The Fiftieth Anniversary Banquet in the Grand Ballroom of the Waldorf-Astoria on Friday evening, November 12, was the scene of the award of the David W. Taylor medal. Homer L. Ferguson, president of the Newport News Shipbuilding and Dry Dock Company and past president of the Society, delivered the principal address at this banquet.

Over 1000 members and honored guests of the Society were seated at tables for this occasion

Hugo P. Frear, a 50-year member, receives congratulations and certificate from J. F. Metten, president.

Paper Interest

Historical papers presented at this meeting form a very interesting picture of 50 years' development of the naval and merchant marine shipping of America.

Perhaps most interesting for the ship-operating executives are the technical paper on "Marine Application of the Gas Turbine," by Professor Soderberg and R. B. Smith; and the historical paper on "United States Navigation and Vessel Inspection Law," by Captain Shepheard.

Gas Turbines

The authors of the gas turbine paper declare that as soon as starting and reversing difficulties have been ironed out the gas turbine is ready to emerge as an important marine power plant, with possibilities of 0.45

Rear Admiral Emory S. Land, chairman of the U. S. Maritime Commission and past president of the Society, introducing Homer L. Ferguson, who was the principal speaker at the banquet.

Ibs. of oil per bhp hour on a weight (for the prime mover alone) of 25 lbs. per bhp. Experience with existing industrial plant indicates a maintenance cost approximately that of a steam turbine plant.

Marine Law

In the historical portion of Captain Shepheard's paper the interest is for the student of marine law. However, the good captain did not stop with history of legislation and its

C. S. Lillicrap, M.B.E., R.C.N.C., Deputy Director of Noval Construction (England), representing as a member of the council the Institution of Naval Architects; Joseph W. Powell, special assistant to the Secretary of the Navy: Read Admiral E. W. Mills, U.S.N., Assistant Chief, Bureau of Ships, U.S.N.; E. B. Whitman, president of the Society of Civil Engineers.



John F. Metten, president of the Society of Naval Architects and Marine Engineers and chairman of the board of the New York Shipbuilding Corporation; Rear Admiral E. S. Land; Homer L. Ferguson; Rear Admiral E. L. Cochrane, U.S.N., Chief, Bureau of Ships, U. S. Navy Department.

(Ben Fasman Photos, N. Y. C.)

weaving of baffling puzzles for the American navigator and shipowner. In a few remarks at the end of his paper he focused the attention of the gathering on the problem of doing something about this and advanced some Coast Guard proposals as follows:

"To any group as familiar with the nation's maritime law as this, it is unnecessary to present any statement of the compelling need for clarification, revision and codification of the laws that have accumulated on the statute books for as long as a century and a half. But four points are suggested by the Coast Guard at this time. The

first of these is the feasibility of the present as a time to effect the revision and simplification of these laws.

"The second point is that the industry has been laboring under a severe handicap imposed by the very weight of these laws, many of which are contradictory and others of which are superfluous. The third point is that proposals affecting existent rights within the industry should be given most careful consideration. And the fourth point is that no revision in the laws now in existence should be undertaken without complete participation by the industry.

"The Coast Guard has subjected the situation to a long and detailed study, since the commandant has long been anxious to answer the industry's own demand that the oppressive weight of all this legislation be lifted from the industry.

"In this task, however, the Coast Guard has no desire merely to recodify or to revise the laws on the strength of its own discretion and then impose the result upon the industry. On the contrary, the Coast Guard is anxious that the industry's representatives in their respective fields of shipping shall have a voice in the undertaking."

Rear Admiral Howard L. Vickery, vice chairman of the U. S. Maritime Commission; John S. Carswell, representing the Institute of Marine Engineers (England); Rear Admiral George H. Rock, U.S.N. (Ret.), past president of the Society.

(Ben Fasman Photos, N. Y. C.)





New Floating Dock At Geddco Yard

Our illustrations show the new 550-foot floating drydock, consisting of six pontoons or sections, now in full operation at the Alameda yard of General Engineering & Dry Dock Company, where it is handling vessels up to a maximum of 12,000 tons.

The tankage space in each pontoon is subdivided into three starboard and three port compartments. In order to sink the pontoons, water is admitted through flooding valves. The basin in which this dock operates is dredged to a depth that will permit ships drawing up to 25 feet to be brought into the dock.

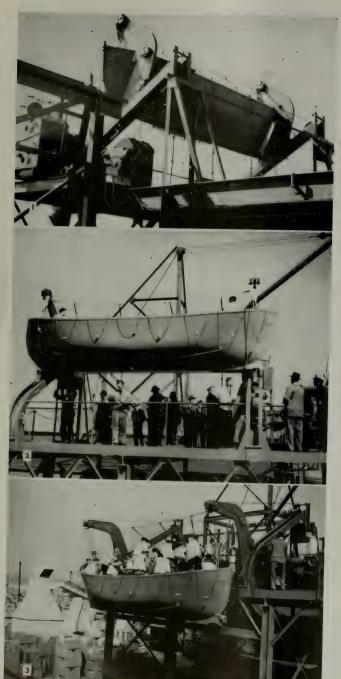
When the vessel is in position on the dock floor and is adequately supported by keel and bilge blocks, the water is pumped out of the pontoon compartment and the surplus buoyancy in the pontoons lifts the vessel clear above the surface of the water.

Flooding and pumping motors are controlled either from the dock or from a central station situated on the wharf.

The new dock was constructed under the supervision of the U. S. Navy Department, and is modern in every respect. Malcolm "Mac" McGown is drydock master, and is assisted in the control tower by Electrician Stewart Woolsey.







Tests of Gravity

(All photos U. S. Coast Guard official pictures)

Gravity davits, capable of being lowered in one-eighth of the time required by ordinary mechanical or radial-type davits, have been approved by the U. S. Coast Guard for installation on all Victory ships.

The new quick-lowering davits were discovered to be of dramatic efficiency during tests made by the Coast Guard in New York in Octo-

The davits tested were designed for a working load of $6V_2$ tons per set. Known as the 30-V type, they are equipped with a CV dual type lowering winch having two drums rated at 3250 pounds per drum. The tests were conducted with a fully-loaded and equipped lifeboat 24 feet in length, having a capacity under wartime conditions of 29 persons.

For testing purposes, the davits were installed on a model of a ship's side. The model was an exact replica of the side of a merchant ship; it was complete with rail, embarkation deck at proper level, and with everything so arranged as to approximate actual working conditions.

The tests were begun with the boat in the chocks. The boat was then released and lowered to the boat deck in 16 seconds. At this level, a full

- (1) The 24-ft. motor lifeboat is shown in stowed position against gravity davits similar to those being installed on forthcoming Victory ships with approval of U. S. Coast Guard merchant marine inspectors.
- (2) Stowed position of the lifeboat is inspected after raising by electrically operated winch on gravity davits at manufacturer's plant. Inspectors note operation with approval.
- (3) Manufacturer's demonstration of electrically-operated gravity davits shows the lifeboat at embarkation deck level as boat load of 29 persons is unloaded. Coast Guard inspectors have approved this boathandling davit, whose launching action is practically fool-proof, due to gravity principle operation.

Davits

wartime load of 29 men, wearing life preservers, embarked; the boat was immediately lowered to the ground, a distance of 18 feet, in 12 seconds. Since the average weight of the men was 165 pounds, the full load aboard was 6350 pounds in addition to the weight of the boat itself and its normal operating equipment.

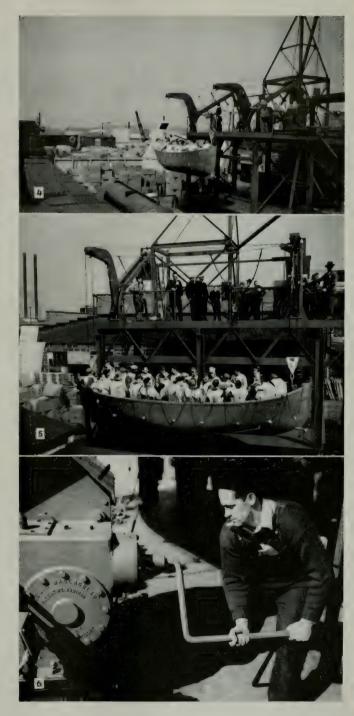
After it had reached the assumed water level, the boat was hoisted again by motor power to the boat deck level, where the men disembarked. The boat was then raised to its original position in the chocks. The tests were repeated a sufficient number of times to convince Coast Guard experts that the entire installation could be expected to function satisfactorily under severe conditions at sea.

The Coast Guard also tested the davits to make certain that it would be possible to operate the lowering winch by hand in case the power should fail during an emergency.

The tests proved conclusively to the Coast Guard that it will be possible to lower lifeboats on Victory ships much faster than it would be with mechanical or radial-type davits. During the entire demonstration, the davits, releasing gear (Welin-Rottmer type), and other equipment functioned smoothly and easily.

The success of the test marks the latest achievement of the Coast Guard in its campaign to promote the safety of life at sea.

- (4) Lowering away from embarkation deck is demonstrated by gravity davits for 24-ft., 29-person motor lifeboats. This action, as demonstrated for the inspectors, represents only 20 seconds from the command "Swing out."
- (5) The lifeboat is lowered from gravity davits in a practical demonstration at manufacturer's plant.
- (6) Emergincy hand power is readily employed if mechanical or electrical failure hinders operation of winches on the gravity davits.



Pacific Coast

Marine Activities

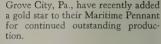
by Special Correspondents

Marine Exchange Elects

The Marine Exchange of the San Francisco Chamber of Commerce on November 22 elected the following six persons to serve as directors for a two-year term, beginning January 1,

J. J. Geary, J. T. Greany, A. K. Hulm, A. B. Johnson, Jr., E. J. Macfarlan and A. G. Townsend.

All of these succeed themselves, with the exception of Mr. Geary, who takes the place made vacant by the resignation of L. A. Lapham, who is in the service of his country and unable to attend directors' meetings.



The new office, located in San Francisco, is the third of three branches serving the West Coast area. The other two offices have long been established at Los Angeles and

According to company spokesmen, the new San Francisco branch, under the local supervision of service representative John G. McKissick, will facilitate the installation and maintenance of Cooper-Bessemer diesel engines in Army and Navy vessels constructed in the northern California territory.



AT SHIP LAUNCHING
Christened by Mrs. Walter J. DeLong, wife of Washington State's Selective Service Director and Adjubant General, the Liberty ship Elisha P. Ferry was launched. Flamen Henry J. Kaiser Oregon Shipbuilding Corporation yard. Colonel DeLong spake at the launching, The Elisha P. Ferry is named for a Michigan-born lawyer who became surveyor general of Washington Territory in 1869, served as territorial governor from 1872 to 1860 and as first governor of the newly-admitted State from 1889 to 1893. The picture shows Colonel and Mrs. DeLong on the launching platform.

AT SHIP LAUNCHING

Factory Office

The opening of another Pacific Coast factory branch office has just been announced by officials of The Cooper-Bessemer Corporation, 110year old engine builders, whose plants at Mount Vernon, Ohio, and

Sea-Tac Expansion

As the scope of naval warfare increases on the Pacific, and as the logistics problem for the armed forces becomes greater, the U.S. Navy and the U.S. Maritime Commission are stressing the importance of developing greater facilities for repair and reconditioning of ships as well as for certain types of construction. This is particularly true in the Puget Sound territory, where R. J. Lamont, president of the Seattle-Tacoma Shipbuilding Corporation, announced that his corporation expects not only to increase destroyer production at the Seattle plant and carrier production at the Tacoma plant but also to take on repair work at both plants.

Sea-Tac's 23d destroyer, the Stoddard, was launched on November 19 and christened by Mrs. Mildred Gould Holcomb of Berkeley, California, wife of Captain Harold R. Holcomb, U. S. N.

The Tacoma yard of Sea-Tac has revived the interesting old custom of carrying a broom at the masthead, or rather king post head, on trial trips. A rigger, Tom Gladding, former Navy seaman, is maker of the

WORKERS RECEIVE "F" AWARD

Captain H. K. Stubbs, acting supervisor of Navy shipbuilding in the Seattle area, presenting to employees of the Seattle-Tacoma Shipbuilding Corporation the fourth Navy "E" award wan by the Seattle branch of the corporation. The employees accepting the award rare, left for right: Robert Foster, pipefilter, whose son was killed in the sinking of the U. S. S. Nasha: Eva Chepolekis, welder, whose son was killed in the invasion of Italy; and Mildred Felix, engraver, whose husband, a member of the crew of the cruiser Houston, was captured by the Japs and died in a Jap prison camp.



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special brooms used, and is known as "Broom Keeper." After each trial trip he tags the broom used with the name of the ship and keeps it, along with the other brooms, in a tack in the riggers' department, bringing them out for display on special occarsions.

The Tacoma plant on November 8 launched its 48th hull, the auxiliary aircraft carrier Puncher for the British Navy. This plant has recently been awarded by the U. S. Navy a contract to build 15 aircraft carriers of a type slightly larger and faster than those building at Vancouver, Washington. This contract totals between \$150,000,000 and \$180,000,000, and will keep the Tacoma yard busy well into 1945.

San Diego Boat Building

The backlog of orders for new fishing vessels held by the several San Diego boat yards is now assuming healthy proportions indicative of the value of the fish pack to the Southwest and the pressing need for more and better boats.

The heaviest program, as far as values are concerned, is that of the Campbell Machine Works, with orders for five long-range, all-brine tuna clippers totaling nearly two million dollars. Their orders to date are for the following:

One vessel 143 feet long, 29 feet beam and 14 ft. 6 in. molded depth. Power, one 600-hp Union diesel engine supercharged to 840 hp. Cost approximately \$325,000.

Three vessels 140 feet long, 29 feet beam and 14 ft. 6 in. depth. Power, one 600-hp Union diesel supercharged to 840 hp. Cost approximately \$320,000 each.

One vessel 149 feet long, 30 feet beam, 15 feet molded depth. Power, one 800-hp Union diesel supercharged to 1200 hp. Cost in excess of \$400,000.

The latter will be the queen of the tuna fleet, the largest and fastest vessel of her type to be built.

The Lynch Shipbuilding Company has orders to date for the following: One vessel 110 feet long, 27 ft. 6 in. beam and 13 ft. 6 in. molded depth. Power, one 525-hp Enterprise diesel. Cost about

Three vessels 96 feet W. L. length, 25 ft. 6 in. beam, 12 ft. 6 in. depth. Power, one 400-hp Enterprise diesel. Cost about \$150,000 each.

All will be full brine boats with the most modern equipment.

The Harbor Boat Works have practically doubled the ground area of their plant and are proceeding with the following boats:

Three vessels 110 feet long, 25 ft. 8 in. beam and 13 ft. 10 in. molded depth. Power will be 450-hp diesel, either Atlas or Union. Cost will approximate \$190,000

Three vessels 47 feet long, 14 feet beam

and 5 feet depth. Power will be one 75hp 4 exhinder Caterpillar diesel for the first beat and a 60 hp 6 exhinder Caterpillar diesel is proposed for the other two. Cost will range from \$12,000 to \$16,000, depending on the power to be installed.

One vessel 42 feet long, 12 ft 10 in beam and 5 feet depth. Power will be one Chrysler Crown gasoline engine with 3.46 to 1 reduction gear and delivering 90 hp. Cost about \$12,000.

The three 110 foot boats will be modern all brine tuna boats, and the smaller boats will be ice-refrigerated. This is the most ambitious program ever to be engaged in by this yard.

The Kettenburg Boat Works, famed as originators of the sleek Pacific Coast class of racing yachts, and builders of many fine yachts in peace times, has orders for the largest number of boats. These are:

Five jig boats 32 feet long, 10 feet beam. Power, one Chrysler Crown gasoline engine with 3.46 to 1 reduction gear developing about 100 hp. Cost about \$5000 mch.

each.
Eleven 38-foot-long, 11 ft. 6 in. beam live bait and jig boats. Power either 4 cyl-

live bait and jig boats. Power either 4 cylinder 40-hp Caterpillar diesel or Chrysler Crown 3.46 to 1 reduction geared gasoline engines. Cost will range between \$6000 and \$8500 depending on power installed.

From the above it is apparent that the local fishing fleet is soon to be augmented by 32 fine new boats of the most modern design.

More Concrete Ships

While the majority of the yards originally holding orders for concrete vessels have had their orders canceled and the yards closed, the Concrete Ship Constructors have shown such an outstanding ability to build and deliver these unique ships rapidly that the Government has given them another order for 25 concrete dry cargo carriers to be turned over to the U. S. Army.

Preliminary plans show the vessels to be 265 feet long, 48 feet beam and 17 ft. 7 in. molded depth, with double full length concrete bulkheads to stiffen the hull, and eight cargo holds, four on each side. The sheer line is straight and parallel with the keel, and there is a concrete forecastle erection and a wooden deck house amidships, but no poop erection. The barges will cost approximately \$300,000 each.

Whale Shy

British Columbia's whaling fleet of three vessels has returned to its Victoria, B. C., base after killing only 91 whales, the worst season in several years. During 1942 a total of 168 were taken, and in 1941, 328 were bagged.



SHIPYARD CREW CELEBRATES

EELEDRATES

Employees of the Olson & Winge Marine
Works, given full charge of the launching
of a Navy lighter, sprung a surprise when
Ragner Salldin, a husky painter, dressed in
a red and white striped gown and wearing
a small red hat trimmed with white flowers
and a red veil, stepped on the sponsor's
platform and was introduced as Miss Veronica Bilgewater. Miss Bilgewater christened the 110-foot lighter. The launching
was followed by a celebration by the yard
employees, who had completed the firm's
contract for 12 Navy lighters, five covered
and seven open vessels.

NEW DESTROYER ON TRIAL TRIP

Lieutenant Commander D. M. Coffee, commanding officer of a newly-commissioned Sea-Tac-built destroyer, on the bridge of the vessel during her trial run. His executive officer, Lieut. Comdr. W. G. Collar, stands by. Both officers were highly pleased with the excellent performance of the ship, and anxiously await action with her against the enemy.





Installing hardware fittings.

The great shipyard at Vancouver, Washington, received an urgent letter. It was signed by Admiral E. J. King, commander-in-chief of the United States fleet and chief of naval operations. It read, in part, "I do wish to inform you that the completion of more aircraft carriers (BB3's) in appreciable numbers ahead of present schedule is of vital importance to the early conclusion of the war, and request that within existing conditions, both labor and management do their utmost."

Vancouver's affirmative answer was immediate. After a session of yard representatives on man power and materials, a slogan was broadcast—"Two more by '44!"

To those who had already been straining every resource night and day of a seven-day week, this meant that two more carriers were irrevocably pledged to the Navy before January, 1944.

The already high tempo increased overnight. And among the more than 30,000 Vancouver workers who

No Ships Without Joiners

are responding so valiantly and determinedly to the challenge are over a thousand employees of Buckler

Company, ship joiners.

Al Gambell, assistant general superintendent of ship joinery work for Buckler Company at Vancouver, is a well-known architect. He was in New York from September, 1942, until February, 1943, directing a staff of Buckler draftsmen in drawing plans for the joinery to be installed aboard the aircraft carriers. Since taking over the job at Vancouver, he has maintained an amazing production record.

He drives his workers, but he drives himself harder. That's part of the secret of company workers' determination to get out those extra two carriers. The supervisors work from 12 to 16 hours a day, seven days a week, and the men and women on their crews feel a personal obligation to keep up with them.

The joinery each carrier requires includes complete fabrication of nearly 30,000 square feet of metal bulkheads; installation of 185 metal doors and frames; 2000 pieces of furniture assembled and secured to the decks; 80,000 square feet of glass insulation; laying of 220,000 board feet of lumber for the flight deck and 10,000 feet of deck tread.

To meet the challenge of the two more carriers added to an already crowded schedule, Buckler readjusted its production techniques.

Deck Prefab

The company's flight deck prefabrication building, completed the first week in November, is an outstanding example of this. With full protection from the weather, 18 sets of flight deck bays can be fabricated here over a 24-hour period. Proper length lumber is stored in numbered piles, so that no ends are wasted in cutting. The first coat of stain is applied here, also.

Bays are bundled according to their position on the deck, taken during the graveyard shift to the ship. and stored under the correct deck house on board, ready to be installed in the morning by the day crew. This prefabrication building speeds up work very measurably.

Shipside Delivery

Another short cut that saves manhours is shipside delivery. Truck-loads of material go direct from joiner's warehouse to ship, eliminating the unloading at shipyard warehouses and reloading for delivery to the ship. Loads are carefully routed and timed to arrive at that portion of the carrier where they are needed, when needed. A tremendous amount of detail has gone into the setting up of this system, and the time saved is enormous.

Insulation

The insulation problem has been attacked from two sides. Dick Kane, superintendent of insulation, evolved a plan of redeeming trimmed ends of the glass insulating material. A saving of over 600 feet of insulation daily has been established.

A new method for installing deck head insulation now in use is cutting man-hours required for the job in more than half. It involves the employment of tee irons and metal wedges instead of the former studs. The new method is quicker and easier, and eliminates the abrasion to workers' hands and wrists suffered under the old manner of handling the material

In the month of September a shipbuilding record was set at Oregon Shipbuilding Corporation, Portland, when 24 Liberty ships were completed in 30 days. Oregon ship built those ships; Buckler did the joiner work.

ON THE FACING PAGE:

- (1) Stud welding of wall insulation.
- (2) A sheet metal worker welding a door frame.
- (3) One of the 185 metal door frames being placed by joiners.
- (4) Shipside delivery is expedited by careful planning and timing. The illustration shows checking of materials.



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Foreign

Shipping News

by Rodger L. Simons

II-Swedish Merchant Marine

Improvement of living accommodations on board ships of the Swedish merchant fleet is contemplated in a table of recommendations put forward by the Swedish Board of Trade. Promulgated under directives from the Swedish Parliament, the proposal means that the regulations as to crew accommodations should be revised not only for new ships, that is, those built subsequent to the new regulations, but also is to apply to vessels already built or in operation.

The stipulations are severe, but shipowners as well as representatives of the crews are in rather general agreement on how they shall be carried out. The cost of the prescribed alterations has not yet been clearly stated, but has been reliably estimated at about ten million Swedish crowns, or about \$2,500,000.

War Losses of 150,000 Tons

According to statistics of current publication, the Swedish merchant marine decreased by 30 vessels of 83,000 gross tons during 1942. The nation's merchant fleet is now inventoried at 2090 vessels of 1,382,000 gross tons. The tonnage losses during the past year were a great deal larger than during 1941, even though the number of ships lost was less. From the outbreak of the war up to the end of 1942, the Swedish fleet had been reduced by 162 vessels, aggregating 235,000 gross tons.

These figures are net, and are compiled after the inclusion of new construction. Thus the number of Swedish ships lost through war action during 1942 totaled 43, of 147,000 gross tons, bringing the total Swedish war losses, exclusive of new vessels, up to 190 ships. Those lost in other ways than through war action numbered nine, while 20 vessels, including the liner Kungsholm, were sold

to foreign owners and 11 were removed from the register for other reasons.

The toughest month the Swedish merchant fleet has had since the war started was January of this year, when eight ships went down. The largest of them were the safe-conduct ships Sveajarl and Brasil, which were mined off the Norwegian coast while outward bound, with losses of 44 persons.

But new construction at Swedish yards has been well maintained in spite of the difficulties in obtaining plate and other materials. In all, 35 vessels, of 78,500 gross tons, have been delivered to Swedish owners, as compared with 29 vessels, of 91,000 tons, during 1941. A further eleven vessels, of 21,800 gross tons, were bought from abroad. But how long this new construction can be maintained is a problem wrinkling the foreheads of shipyard executives all along the coast of Sweden. Promised deliveries of plate from Germany have fallen off sharply, with the result that the current boom in Swedish shipbuilding threatens to go into re-

The 2090 vessels referred to above as making up the Swedish merchant fleet are distributed as follows: 717 steamers of 597,976 tons, 494 motorships of 701,244 tons, 876 auxiliary vessels of 82,261 tons, and three small sailing craft of 168 gross tons.

Largest of current deliveries from Swedish shipyards was the 7430-ton motor liner Brasil, ordered by Axel Johnson's line. The tenth in a series of fast cargo liners which Gotaverken started for this company in 1935, it is intended for the Johnson Line's traffic between Sweden and South America. In addition to this remarkable series of sister ships, which is the biggest the yard has built for one owner, the Gotaverken plant has de-

livered a further ten vessels of another series to the Johnson Line.

In the fall of 1941 the American press chronicled the loss by the Swedish Navy of three destroyers which, while lying at their anchorage near Stockholm, were sunk by an explosion on board one of them. It is now announced that one of these ships, the Göteborg, of the so-called "town" class, has been completely restored to its original appearance by a rather unusual piece of shipyard "plastic surgery."

Of the original vessel, only the fore part could be used. It was therefore decided to "splice" or "graft" this fore part onto a newly-built stern. A Swedish shipyard was commissioned to build the stern part, which was then towed a considerable distance through open sea to the yard where the salvaged fore part lay. The work of pasting the two parts together has now been accomplished, and the result is a remarkable testimony to the skill of the engineers and the shipyard.

The second of the destroyers damaged by this accident, the Klas Horn, will be restored in the same way. The third was found too badly messed up for any salvage.

Since this accident occurred, the Swedish Navy has taken delivery of a considerable number of new ships, among them four so-called coastal destroyers of 600 to 700 tons, and a series of somewhat larger destroyers. It is no secret that the Swedish Navv is in splendid shape as to both equipment, personnel and training. The fleet is not set up to steam ten thousand miles and fight an engagement, as no such action is ever anticipated. But it has been very well organized for operations in Scandinavian waters and is incomparably the strongest fleet in the Baltic Sea.

III-Conditions in Finland

The largest shipping enterprise in Finland, Finska Angfartygs Aktiebelaget (The Finnish Steamship Co.) recently passed its sixtieth milestone, or mile-buoy, if that sounds better. During the greater part of the past ten years its management has been in the hands of Sir Henrik Ramsay, Minister of Foreign Affairs in the present Finnish cabinet. The company's fleet totals 60 ships of 98,548 gross register tons, as against 43 of 56,813 g.r.t, ten years ago.

At its recent annual meeting, under chairmanship of Armas Makkonen, a dividend of \$10 per cent was declared Minister Ramsay, Bir ger Kregius, Bertil Tallberg and Ferdinand Altthan were reelected to the board and Antti Wihuri was elected to succeed the late K I T. Kuntsi The presence of the country's For eign Minister on the board represents an interesting and characteristic Scan dinavian deviation from American usage in these matters. In America a man would resign such a commer cial connection before accepting a comparable governmental post, but in the Scandinavian countries and elsewhere in Europe the retention of the one is not deemed out of keeping with the acceptance of the other. Similarly the phenomenon is often observed over here of a man's holding both city and national administrative jobs at the same time, something which would not happen in the States.

The net profits of the Finland Line, as it is commonly called, amounted to 10,040,000 Fmk., plus 1,060,000 Fmk. carried forward. After payment of the dividend mentioned above, the balance will be transferred to reserves and insurance fund or carried forward on the P. & I. account.

The company's motorship Saimaa was in American waters in December, 1941, and was taken over by the U.S. Government. All the rest of the Finland Line fleet is within the North Sea blockade. Aside from the icebound season, all of the company's freighters have been used the year around, and some of the passenger vessels have also been in limited service. A new ship, Kellaa, was launched in December last year at the yard of the Langesund Shipbuilding Company, Langesund, Norway. This one and a sister ship, Salla, a pair of 2600-tonners, were ordered in 1938 by Antti Wihuri, referred to above as reelected to the board of this company. They are 'tween-deckers designed to do 11 knots, strengthened for navigation in ice. (But it is said here in Helsingfors that this stiffening against ice has reduced their loading capacity to about 2450 tons.) At the moment of writing (mid-July), Mr. Wihuri is en route to Lengesund to take over the Kellaa and accompany her to Finland

The Kellaa and Salla were built to dimensions which would just permit their passage through the Lachine Locks, as it had been Mr. Wihuri's intention to enter them in the Finland to Great Lakes traffic. More and more Finnish and Swedish shipowners are

dreaming along this line and are shaping up plans to go into that trade "after the duration is over," as one man here amusingly put it to me in his practical if not perfect English.

The Finland Line's steamer Rhea was en route to Great Britain just after the outbreak of the war in 1939, and was seized by the Germans in the North Sea and confiscated by a Prize Court for the Reich. However, the ship has been given back and taken over by the Finnish Government, but is being operated for account of the Finland Line. The small steamer Tilda, which the company took over when it bought out another company, has been sold.

Another report recently issued was that of the Finska Amerika Linjen, A/B, or Finnish America Line. The income from traffic amounted to 9,-000,000 Fmk, in 1942, as against 8,-400,000 in 1941. Depreciation came to 1,700,000 Fmk. as compared with 2,400,000 in the prior year. Expenses and interest totaled 1,500,000, while for 1941 they came to 900,000. But what kept the profits down was the terrific bite for taxes, 4,900,000 Fmk. in 1942 as contrasted with 2,800,000 the year before. Thus the actual profit was a mere 900,000 Fmk., while for 1941 it had stood at 2,300,-

Shipping Difficulties in Finland

Some of the difficulties of trying to be a shipowner in Finland these days were indicated in the annual report of the Finnish Shipowners Association, just published here. One problem is that of taxation, and it is felt that the present regulations as to the depreciation and taxation of merchant ships will have to be revised if they are not to constitute an even more grievous burden to the ship-operating community.

Another vexatious problem appears to be that of the many and serious damages sustained by Finnish ships, even though they are able to operate within nearby waters. In the first place, Finland has no money, no foreign exchange with which to pay for repairs. And even if she did, she would find that all the Swedish yards are already choked with work though critically short of materials, while all the German yards are either filled with German business, chiefly submarines, or are under the frequent attention of the RAF for that same reason - submarines. The result is that Finnish ships badly in need of repair accumulate at the few local yards, whose capacity is entirely inadequate to accommodate them.

The participation of the Finnish merchant fleet in its country's foreign trade showed a nominal increase from 60 per cent in 1941 to 64 per cent in 1942. Imports, in particular, were carried in the country's own ships. But as Finland's trade with Sweden is now scant, these figures mean that her shipping connections are practically entirely with Germany. Thus Finnish shipowners are constantly being bewitched, bedeviled and bewildered by all of the major and minor annoyances which go with being in commercial relations with the New Disorder.

The board of the Association professes to perceive an awakened interest on the part of the Finnish government in shipping problems and the future development of Finnish shipping. Thus the hope is expressed that all measures will be canvassed toward making up for the critical losses in Finnish merchant tonnage. At the Association's annual meeting, Birger Kregius, mentioned as being on the Finland Line's board, was reelected chairman for the ensuing two-year incumbency. Other members of the board include Captains Herbert Anderssen and L. G. W. Boxberg, and Einar Pellas and Antti Wihuri.

The Finnish shipbuilding industry sustained a loss in the recent death at the age of 48 of A. G. Rusko, assistant managing director of the Crichton-Vulcan Shipyard at Turku, Finland. For 17 years he had designed all the ships turned out by the yard.

The former Finnish steamer Erge, 2800 tons, was sold some time ago to the Maritime Suisse S. A., who already operate the Generese. Renamed Zurich, the former Erge has been authorized by the Swiss Federated Council to sail under Swiss flag. The ship was scheduled for the shuttle run, Lisbon to Genoa, when she left here, but her present career or whereabouts are not known.

Finland's Wartime Trade

Finland and Turkey recently concluded a trade agreement which became effective on May 1 of this year. The arrangements call for private barter deals between the two countries, based on certain specific commodities mentioned in the agreement,

Another trade agreement of a sort was concluded between Finland and "France" at Vichy. This one calls for an exchange of goods to a value of 400,000,000 Fmk.



Motor-Generators Rewound For Charging Sub Batteries

After supplying direct current to the street car system of Spokane, Washington, for more than 33 years, a pair of large 600-volt motor-generators, built by Westinghouse in 1910, are now being reconditioned at that company's Emeryville, Calif., plant. When completed, they will enter war service at a West Coast Navy yard, where they will supply 325 volts direct current to recharge submarine batteries.

Preparation of specifications to equip these generators for their new task developed interesting engineering problems. Originally rated at 600 volts, 2500 amperes, 1500 kilowatts, it was necessary to lower the voltage and increase the amperage. Design characteristics of the old stators and rotors of the generators necessitated rewinding in the changeover. Because of the shape and size of the coil slots and improvements in insulating materials that have occurred since the equipment was first built, it was possible to take more turns per coil in field and armature winding. This redesigned conversion resulted in a slight saving of strategic copper.

These specifications gave a new rating of 325 volts, 4000 amperes, with a corresponding reduction in kilowatt output from 1500 to 1300 kw. Each generator armature was wound in parallel, instead of series as in the original design. Higher ampere rating required the installation of larger carbon brushes for the commutator.

The alternating current motors, drives for the generators, were rewound from 4000 to 2300 volts to conform with the local power supply. Other operating characteristics remain the same, with the three phase motors Delta wound to provide 2150 horsepower at 360 revolutions per minute at 2300 volts, 245 amperes.

The equipment was originally purchased by the Washington Water Power Co., and put in service for the Spokane Transit system.

Top: The stator of one motor, originally built by Westinghouse in 1910. Hazel Jenken and Frank Agathos, Emeryville workmen, are shown soldering and taping connections.

Bottom: The rotor of the motor. Clifford Dake and Frank Agathos are locking the keeper plates on the field coils.



Joshua Hendy Completes 500 Engines

In less than 25 months, 500 engines to power one-third of the U. S. Maritime Commission's great fleet of Liberty ships, have been completed at Joshua Hendy Iron Works, Sunnyvale, a record never before equaled in the annals of marine engine construction.

More than 3000 of the 7500 Hendy employees jammed one of the huge Hendy shops to witness the ceremony marking this achievement. Charles E. Moore briefly addressed the group, and was followed by Roy M. Brown, vice president of the International Association of Machinists and executive of the State Labor Council. Mr. Brown delivered the keynote address, "We Work to Win," emphasizing the overwhelming eagerness of labor to keep producing until the enemies of liberty are crushed.

A feature of the event was the appearance of Raoul Jobin, leading tenor of the Metropolitan Opera Company, who sang three selections.

"Hendy Engines Span the Globe," a special presentation visualizing the

work being done by the Liberty fleet, powered with Hendy engines, prepared by Joseph F. Donovan, public relations director and master of ceremonies, high lighted the program. A great map of the world was charted to indicate the type of world voyages now in the daily routine of Liberty ships, with reports on some of the incidents in the careers of ships powered with the first, 100th, 200th, 300th and 400th engines built at Hendy, all of which are still on the high seas.

Guests included representatives of the U. S. Maritime Commission, the armed services, Government and shipbuilding industry. President Moore and the executives of the company entertained guests at luncheon following the ceremony.

California Ships Can Take It!

Two Liberty ships, both built in California and bearing the names of prominent pioneer Californians who were intense and unyielding rivals, ironically proved comrades in a recent torpedoing drama in the South

Pacific, the War Shipping Administration has disclosed.

Survivors of the attack on the M. H. De Young, named after the cofounder of the San Francisco Chronicle, have been landed at a home port by the Mark Hopkins, named for the capitalist who helped build the Central Pacific Railroad, now part of the Union Pacific, across the Sierra Nevada Mountains.

Three seamen and a Navy passenger lost their lives in the torpedoing.

The M. H. De Young did not sink,

The M. H. De Young did not sink, but was left immobile in the water by the blow the torpedo struck. A Navy vessel was ordered to the scene and the tanker Quebec dispatched to tow the stricken Liberty ship to an island port. The Mark Hopkins then was instructed to proceed to the island. There she lifted the M. H. De Young's cargo and removed her surviving crewmen.

William Munda of Taylorsville, N. C., was the master of the M. H. De Young; which was built at the Permanente Metals Corporation shipyard, Richmond, Calif., and was operated by R. A. Nicol & Company, Inc., of New York, N. Y. The captain of the Mark Hopkins, which was built at Marinship Corporation shipyard, Sausalito, Calif., is Harold B. Ferris of Eastbound, Wash.



KNOWLEGGE IS THE STARIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome St., San Francisco, California

NEW SPECIMEN EXAMINATIONS FOR LICENSED OFFICERS

In the October and November issues we published the new specimen examinations covering the grade of Third Mate for ocean-going steam and motor vessels.

We now present specimen examinations for Second Mate for steam and motor ocean-going vessels. These questions have been prepared by the United States Coast Guard for the purpose of acquainting those who are interested with the type of examination they will be called upon to pass before they can qualify for an original license or a raise in grade. It should be borne in mind that these sample examinations are strictly "specimens" and are issued as an indication of the range of subjects that should be studied.

SECOND MATE—OCEAN STEAM AND MOTOR VESSELS

Subject: NAVIGATION*

• Candidates may use any navigational methods they wish in the solution of problems, provided they are correct in principle. Because of the many different methods of computing a position line, it is necessare, in order to obtain unstremist in examinations to require as an answer either the longitude based on the D. R. latitude as worked by Time Sight or the longitude of the computed point as obtained by any position line, method either with plotting or traverse tables.

1. Meridian altitude-Sun.

June 5, 1942, on a vessel in D. R. latitude 6°02' S., and longitude 109° 50' E., the meridian altitude of the sun's lower limb was observed to be 61°17', bearing North. The observer's sextant had no index error and height of eye was 40 feet.

Required: The latitude.

Time allowed—1 hour.

2. Star-Position Line & Gyro Error.

September 9, 1942, a vessel in D. R. latitude 42°21' N. and longitude 64°34.6' W., observed the star Arcturus for a position line and gyro error, about 7 p.m., ship's time. Chronometer time of observation was 23h 10m30s, chronometer fast 2m30s. Sextant altitude was 36°58.5', index error nil, and height of eye 50 feet. Arcturus bore 264° by gyro compass.

Required: The longitude of the computed point, the direction of the position line, and the gyro error.

If worked by time sight, required: The longitude based on the D. R. latitude, direction of the position line, and the gyro error.

Time allowed-2 hours.

3. Deviation by Amplitude of the

June 16, 1942, on a vessel en route from Colon to Baltimore in D. R. position latitude 9°48' N. longitude 79°41' W., an amplitude of the sun was observed at 6:20 p.m., ship's time, the sun's center being about one diameter above the visible horizon. The sun bore 2901/4° p. s. c., variation 5° E., ship on course 29° p. s. c. Chronometer read 23h44m10s and was fast 5^m24^s.

Required: The deviation of the

compass and the vessel's true course. Time allowed-1 hour. 4. Azimuth-Sun.

May 14, 1942, on a vessel in D. R. latitude 26°12' S. and longitude 170° 10' W., obtained an azimuth of the sun for compass deviation, at about 4 p.m., ship's time. Chronometer read 2^h49^m30^s, which was slow 8^m30^s. The sun bore 294° by standard compass, variation 13° E., ship on course 249° p. s. c.

Required: The deviation of the standard compass and vessel's true course.

Time allowed-11/2 hours.

5. Dead Reckoning.

A vessel took departure from Diamond Shoal Lightship in latitude 35° 05.3' N., and longitude 75°19.7' W., bearing west by compass, variation 6° W., deviation 3° E., distance 3 miles. The following courses were then steered for the next 24 hours:

P.s.c.	Var.	Dev.
22°	6° W.	4° E.
349°	6° W.	5° E.
113°	6° W.	1° W.
Wind	L.W.	Distance
NNE.	0°	70
NNE.	2°	50
NNE.	4°	217

A current set 40° magnetic, drift 2

Required: The ship's latitude and longitude of arrival.

Time allowed—11/2 hours.

6. Mercator Sailing.
En route from Colon to New Orleans, you have followed the second leg of your course to a position in latitude 21°50' N., and longitude 85° 03' W., variation, 5½ E. What would be the magnetic course, by mercator sailing, to Southwest Pass Lighthouse, La.?

Time allowed—11/2 hours.

7. Bearings.

1. A vessel is steering 253° by gyro, speed 11.3 knots and the first bearing of a light is taken at 2210, bearing 279½° by gyro. At 2324 the same light bears 298°.

Required: How far will the ship pass off the light when abeam and, holding same course and speed, what time will she be abeam?

2. Ship on course 169° p. s. c., speed 12.8 knots. At 1327 a light is observed bearing 238° p. s. c. and at 1406 the same light bears 266°.

Required: The vessel's distance off the light at second bearing and when abeam.

3. Running along the coast, the night orders state that the Master wishes to be notified when a certain light is sighted. When you pick it up, it bears 15° on the bow and you

figure you have 13 miles to run to abeam.

Required: How far off the light will you tell the Master you expect to pass holding the same course?

4. On a vessel making a landfall, the vertical sextant angle of a mountain peak is observed to be 3°38', the height of the peak as listed on the chart being 1,950 feet.

Required: The vessel's distance from the mountain.

Time allowed 11/2 hours.

Subject: INSTRUMENTS AND ACCESSORIES

1. Describe a gyro compass and the principle upon which it operates.

2. Describe a magnetic compass and binnacle. What provision is made in the binnacle for the compass compensation?

3. Describe the barometer indications by means of which we are able

to foretell weather.

4. Explain each of the errors which sextant altitudes are subject to and state whether they are to be added or subtracted.

5. Describe two methods of making the fourth adjustment to a sex-

6. State the procedure for taking bearings by radio direction finder.

- 7. State your duties in connection with the chronometers. How would you check their error, record their daily and accumulated rates and wind
- 8. What is the pitometer log? Describe its principle.

9. What are the chief causes of error of the taffrail log?

10. Explain the use of the follow-

(a) Barometer (d) Fathometer

(b) Barograph (e) Pelorus

(f) Direction finder (c) Iron Mike Time allowed-2 hours.

Subject: CHART NAVIGATION

1. On what principle is a Gnomonic chart constructed? Describe its projection and use.

2. How would a rhumb line appear on a Gnomonic chart?

3. For what use is a polyconic chart particularly suited? Why?

4. Name all the principal things you would take into consideration when using a chart for navigational purposes for the first time.

5. By what means are charts kept up to date? How do you know when a chart was last corrected?

6 Describe the use of the vertical

danger angle

- 7. How are recommended steamer routes shown on a chart? What are their source?
- 8. Explain the use of the chart
- 9. Describe at least six methods of fixing a ship's position.
- 10. Describe the use of Tide Tables to determine time and heights of tides at any locality. What is a reference station as used in the Tide Tables?

Time allowed 2 hours.

Subject: AIDS TO NAVIGATION

1. Tell what particular meaning is given to the color of the lights on buovs.

2. Why should positions be determined by fixed objects ashore rather than buoys, whenever practicable?

3. What is meant by the characteristics of a light and explain the difference between a revolving, a flashing, and an occulting light.

4. (a) From what reference plane is the height of a lighthouse measured? (b) From what reference plane are depths measured?

5. Are radio bearings more effi-

cient at day or night?

6. Describe how you would correct a radio bearing for Mercator distortion. Where is the correction obtained and how is it applied?

7. What is the meaning of the following abbreviations as listed on the chart for Fire Island Lightship?

Gp Fl (2) ev 6 sec vis 12 m RBn Diaphone

What bottom is indicated by the following abbreviations nearby:

gy S bk Sp Sh

8. Off Boston Lightship in thick weather you hear the lightship's radio signal and 121/2 seconds later you hear the fog signal. What distance are you from the lightship?

9. Off a high rocky coast in thick weather, you blow your whistle and it takes 301/2 seconds for the echo to return to the ship. How far off are

you?

10. You sight a light just breaking clear on the horizon on a clear, dark night. If its charted visibility is 16 miles and your height of eye is 49 feet, what is your distance from the light?

Time allowed—2 hours.

Subject: NAUTICAL **ASTRONOMY**

- 1. What is an Hour Circle? Polar Distance? Declination?
- 2. Explain the relationship of hour angle and meridian angle.
- 3. Cite the difference between the apparent place and the true place of a body in the celestial sphere.
- 4. Define visible, sensible, rational, and celestial horizons and draw a sketch showing each.
- 5. Explain what an amplitude is and how it differers from an azimuth of a body.
- 6. What is the meaning of the upper transit of a celestial body and how does its movement in altitude at upper transit compare with its movement at other times?
- 7. What is the altitude of the elevated pole equal to? The declination of the zenith?
- 8. What is the prime vertical? What is the advantage of longitude sights taken near the prime vertical?
- 9. How must the lines of position of bodies with altitudes of from 86° to 90° be plotted?
- 10. Explain how you determine what bright stars will be suitable for observation at twilight and what factors would govern your selection of

Time allowed—2 hours.

Subject: INTERNATIONAL AND INLAND RULES OF THE ROAD

The subject, under the caption "Third Mate-Ocean," is common to all grades of the masters' and mates' examinations and all candidates will be expected to have a thorough grounding in this important subject. Time allowed-3 hours.

Subject: SIGNALING AND **SIGNALS**

This subject, under the caption "Third Mate-Ocean," is common to all grades of the masters' and mates' examinations and all candidates will be expected to have a thorough grounding in this important subject. It includes: Signaling by International Code flags, Morse and semaphore: signals used by the United States Coast Guard in lifesaving; distress, storm, and special signals.

> Time allowed-3 hours. (To be continued)



by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

Hydraulic System, Fig 16, For 525-kw Sets

The oil pressure for operating the valve gear and for lubricating the bearings is supplied by a gear-type pump in the oil tank located in the base of the gear casing and driven from the low-speed (gear) shaft at reduced speed by means of spiral gears on the low-speed gear shaft and pump shaft. See Fig. 16.

The gear-type oil pump draws oil from the tank and delivers it through an orifice to the hydraulic mechanism and through a cooler to the bearings. A separate hand-operated oil pump for supplying oil to the bearings before starting is located adjacent to the gear casing.

The oil-pressure piping conveys the oil for the lubrication of the shaft bearings of the turbine, gear and generator, and for the hydraulic system of the governing mechanism.

The return oil from the outboard bearing of the turbine and the generator is piped back to the tank. The oil discharged by the bearings in the gear case and by the pilot valve and operating cylinder returns directly to the tank.

Oil Cooler, Fig. 17

Cooling water circulates through the oil cooler tubes in two passes. The oil enters at the opposite end to the water inlet and outlet, and is cooled by passing over the outside of the tubes through a series of baffles, leaving the cooler at the other end. The tubes are expanded tightly into the tube sheets, one of which is fixed, while the other is floating in the shell to allow for expansion of the tubes. This construction permits the re-

moval and replacement of the tube bundle without the necessity of disturbing the oil or water connections.

The oil cooler also has a by pass valve. The valve is plug type with a single bar. Its head includes a jack for loosening or tightening the plug. This valve provides for an uninterrupted flow of oil through the unit at all times. It can be regulated to pass the entire oil flow through the cooler, or by pass all the oil so that the cooler can be opened and cleaned.

The portion of oil flowing through the cooler and portion through the by-pass can be regulated.

The temperature drop in the oil through the unit can be controlled within limits by control of water flow through the cooler or by the by-pass valve, or both.

The oil cooler is designed so that when supplied with 20 gal. per minute of cooling water at a temperature of 85° F. and an ambient engine room temperature of 120° F., the outgoing oil from any bearing will not have a temperature in excess of 160° F. when operating at full load. It is suggested that the circulating water be maintained at a pressure somewhat lower than the oil, so that in the event of leakage the oil will leak into the water rather than allowing the water to leak into the oil, and thus contaminate the oil.

Provide a regulating valve in the line to maintain a supply of water to the cooler.

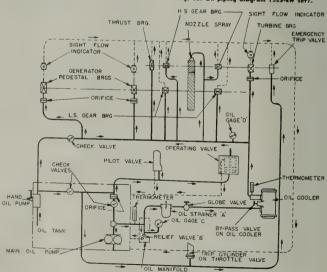
Oil Strainer and Manifold, Fig. 18

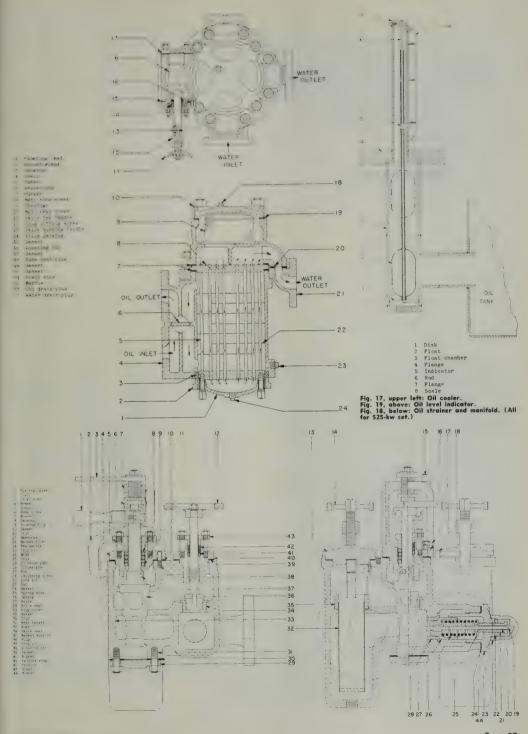
The manifold contains a relief valve "B," Fig. 16, set to prevent the high-pressure oil, supplied to the hydraulic governing mechanism, from exceeding a pressure of 55 to 60 lb. This pressure, as indicated by gage "C," Fig. 16, must be maintained during operation.

A globe valve, Fig. 16, is located in the manifold for the purpose of reducing the pressure of the oil delivered to the low-pressure oiling system for the bearings. This pressure must be adjusted 8 to 10 pounds, as indicated by oil gage "E," Fig. 16, for the bearings, and maintained during operation.

(Page 104, please)

Fig. 16: Oil piping diagram (525-kw set).







A Stud Welder and Its Manufacture

The electric arc stud welder manufactured by the Nelson Specialty Welding Equipment Corporation is now produced in the company's new

plant at San Leandro, California, where complete facilities are installed for turning out all parts of the welding unit as well as for building spe-

Fig. 1: The Nelson electric arc stud welder.

cial production machinery and jigs, dies, fixtures and the like, required in the manufacturing departments of the company.

This welder was designed to supply the need in industry for a portable tool to end-weld steel studs to metal surfaces. Applicable to many types of industrial welding, it is nevertheless extremely simple to operate. Every phase of the actual welding process is automatic; thus new operators can be trained quickly, and it is stated that no previous experience in welding is necessary to learn to operate the stud welder. It is also stated that a newly-trained worker can complete from 500 to 1000 welds daily.

The economy in time, material and labor effected by its use is only one of many advantages. It is strongly constructed of durable materials, yet is very light, weighing approximately seven pounds. Speed and flexibility of movement are thus made possible.

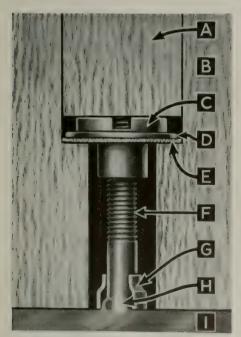


Fig. 2: Sectional view showing stud used in the laying of wood decking. (A) wooden plug: (B) wood deck planking; (C) slotted nut; (D) washer; (E) lampwick grommet; (F) stud; (G) ferrule; (H) weld; (I) deck plate.

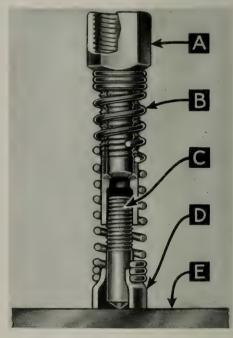


Fig. 3: Cutaway view of chuck-spring-stud-ferrule assembly in position for welding. (A) chuck; (B) spring; (C) stud; (D) ferrule: (E) steel plate.

The control unit weighs approximately 78 pounds. This unit contains the timing device, which, when once adjusted, automatically repeats the time cycle for making each weld.

Principles of Operation

The operating principle of the stud welder is to create and control an are between the stud and the steel surface to which it is to be welded. The operator loads and cocks the gun and places it in the proper welding position with the stud end and the spacer legs pressed firmly against the plate. From the moment the trigger is pulled, the entire weld cycle is automatic. The welding current is turned on and the stud is lifted to create an are which burns a predetermined length of time. The lift of the stud is accomplished by a spring mechanism in the gun, which is set in action when the trigger is pulled. The number of cycles the arc is allowed to burn is controlled by a pneumatic timing device built into the control unit, as mentioned above. When the arc is completed, the timing device trips the gun, thus forcing the end of the stud to be plunged into molten metal. This completes the welding operation, after which the gun is removed from the stud and loaded for the next weld. The timer is adjusted and controls the operation of the gun in fractions of a second. The dial of the timing device is calibrated in cycles, and when once set for a certain sized stud repeats the same timing cycle for each weld.

This welding outfit has marked use in connection with shipyard operations. More than 120 yards in the United States and Canada are now using this equipment in ship construction. Such operations are performed as securing wood decking; securing hangers for wireways, pipe, etc.; securing plastic decking, all types of insulating material, wood furring strips, electric light switches and boxes; and securing many other details along similar lines.

Welding Deck Studs

A photograph of the welding gun is reproduced in Fig. 1. Some details are shown in Figs. 2 and 3. The method of securing wood decking is simple and efficient. (See Fig. 2.) A section of wood plank is fitted and wedged into place. Holes are drilled and counterbored to the desired depth, after which the plate is cleaned of all paint, rust and zinc, through the hole in the planking. The stud is welded through the hole to the steel deck.

A lampwick grommet (E) and a cadmium plated washer (D) are first placed on the stud (F), after which the slotted nut (C) is applied. This is tightened firmly by means of an air drill with a screw driver bit. To complete the wood decking job, a wooden plug (A) is driven into the counterbored hole as in the photograph. It will be noted that the wood deck planking is handled only once.

The former costly operation of drilling holes in the metal deck and inserting bolts from the underside of the deck is completely avoided, as is the subsequent danger of seepage. The metal deck plating always remains watertight, regardless of the wood condition. The method assures complete freedom in the matter of stud placement. The studs may be located wherever necessary to insure the best possible installation. An adjustable, telescoping stand is used in connection with the welder when welding studs through holes in wood or cork. This accessory allows the operator to compensate for varying thickness of material. To insure consistent welds, a porcelain ferrule is provided with each stud (as at G), and the two are used together as a unit in all cases of stud welding. A special spring attachment, which fits snugly into the stud-locked chuck, holds the ferrule firmly on the plate.

Figure 7 is a sectional view showing chuck-spring-stud-ferrule assembly in position for welding. Here A is the chuck, B the spring, C the stud, D the ferrule, and E the steel plate. This shows how the stud is held in the chuck preparatory to welding, the chuck being built of split type to hold the stud properly during the operation. The coil spring around chuck and ferrule presses the latter properly on the plate for all position welding. One end of the coil spring is

formed so that the neck of the fer rule fits snugly therein; the other end fits very securely on the chuck. After the gun has been properly cocked and the stud has been inserted in the chuck, the telescoping stand or legs for supporting the unit are adjusted so that the stud just touches the plate with a slight pressure.

Milling Cutter Bodies

To facilitate the application of the correct milling cutter to a particular piece of work, Farrel-Birmingham Company, Inc., Ansonia, Conn., has developed milling cutter bodies of Mechanite which can be machined for carbide or cast alloy tips within a broad range of rake and spiral angles. A variety of body castings and cutting tips can be kept in stock by machine shops to use in making up cutters for many applications. user faces, bores and slots the hub to suit his requirements, mills the tooth seats, and brazes on the desired tips. Carbide tips may be applied where a high grade finish is required and cast alloy tips used for heavy roughing operations.

Because the bodies are made of Meehanite, which has greater damping capacity than steel, operating speeds can be higher, chatter is reduced and tip life prolonged. Meehanite has a coefficient of expansion that is closer than steel to that of carbide. This helps to make possible a superior bond between body and tip. Meehanite is a relatively inexpensive and readily available metal and its use releases other scarcer materials more urgently needed for war purposes.

Left: Finished cutter with brazed-on carbide tips. Right: Cutter body casting.



On the Ways - SHIPS IN THE MAKING

In Honor of Their Lives!

Names of 12 newspaper and radio correspondents who lost their lives during the present conflict have been selected for assignment to Liberty ships, the Maritime Commission has announced.

Those presented to the Naming Committee of the Maritime Commission were nominated by the Overseas Press Club of America.

Correspondents whose names will be assigned to the vessels some time in the near future are:

Robert P. Post, New York Times; Ralph Barnes, New York Herald Tribune; Jack Singer, International News Service; Melville Jacoby, Time-Life; Byron Darnton, New York Times; Frank Josef Cuhel, Mutual Broadcasting System; Ben Robertson, New York Herald Tribune; Edward H. Crockett, Associated Press; Webb Miller, United Press; Harry Percy, United Press; Carl Thusgaard, Acme Newspictures; Ben H. Miller, Evening Sun of Baltimore.

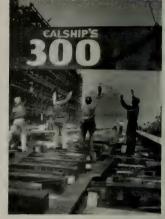
Frigate and Subchaser Launched

For the fourth time in recent weeks, launching of both a frigate and a PC subchaser took place not long ago at the shipyards of the Leathem D. Smith Shipbuilding Company. High lighting the twin launching bill was a brief keel-laying ceremony for the first of a fleet of new-type 4000 ton cargo vessels which the firm is also building in addition to the two types of fighting escort craft.

The frigate, christened the U. S. S. Brunswick in honor of the Georgia city, was sponsored by Mrs. Kenneth G. Berrie, managing secretary of the Brunswick Board of Trade. The subchaser, PC 1179, the firm's latest contribution to the Navy's recently nicknamed "Donald Duck Fleet," was christened by Mrs. Elton A. Washburn of the Smith company.

Calship Lays Keel No. 300

From the day that Calship, brand new and untried, laid keel for its first ship, until the huge yard laid its



Ready to lay keel No. 300 at Calship.

300th keel not long ago, was only 890 days. In that work-crammed period California Shipbuilding Corporation built and launched 286 emergency ships, an average of a ship every three days.

Rounding out 1943 with a speedy completion of its Liberty tanker contract and acceleration of Liberty ship construction, it launched a ship a day for five days before laying keel for No. 300.

The S. S. John A. Roebling, named for the founder of America's steelrope industry, vacated the ways in which Calship put the yard's 300th ship under construction. The S. S. Cyrus K. Holliday, S. S. Carl R. Gray, S. S. Sanford B. Dole and S. S. Ralph A. Cram had been launched earlier in the week.

Calshippers are looking forward to their big part in Victory ship production, which is expected to get under way at the yard early in the new year. The yard will continue to build Liberty ships on many of the 14 ways.

October's Record

The nation's merchant shipyards turned out 163 cargo vessels aggregating 1,675,311 deadweight tons, bringing the total 1943 deliveries to 1524 ships, totaling 15,501,624 deadweight tons, the Maritime Commission announced for the month of October.

October production surpassed that of September by three vessels, or 22, 540 deadweight tons of ships. During



"LIBERTY" GODSPEEDS A LIBERTY SHIP

Under the vigilant eye of the staunch goddess in New York Harbor, one more Liberty ship steams out to sea with full hatches and deckload to join the endless Bridge of Ships carrying cargoes to our fighting men and their allies.

(Photo courtesy U. S. Maritime Commission)

the month, yards delivered 98 Liberty ships, eight Citype cargo vessels, 16 standard tankers, 19 emergency tank ers (modified Liberty ships), three T I or coastal tankers, two private coastal tankers, five seagoing tugs, one ore carrier, three concrete barges and eight special types for military use. While yards delivered eight less Libertys in October than September, they produced three more T 2 tankers and 11 more emergency tankers.

Of the total deliveries, 76 ships, or 47 07 per cent, were delivered by West Coast yards, East Coast yards turned out 51 vessels, or 33.51 per cent of the total, 29 vessels, or 17 66 per cent, were delivered by yards on the Gulf Coast; and seven ships, amounting to 1.76 per cent of the total, were produced and delivered by Great Lakes builders.

The number and type of vessels built by all yards follow:

SHIPYARD	No. of Vessels	Type of Vessel
Alabama Dry Dock & Shipbuilding Co Mobile, Ala.	4	Tankers
Avondale Marine Ways, Inc	2	Sea-Going Tugs
Barnes-Duluth Shipbuilding Co	3	Coastal Tankers
Barrett & Hilp	2	Concrete Barges
Bethlehem-Fairfield Shipyard, Inc Baltimore, Md.	22	Liberty
Bethlehem-Sparrows Point Shipyard, Inc Sparrows Point, Md.	1	Tanker C-3 Cargo
California Shipbuilding Corp	1	Liberty
Wilmington, Calif. Concrete Ship Constructors	12	ET-1 Tankers Concrete Barge
National City, Calif.		
Consolidated Steel Corp., Ltd.	1	C-1 Cargo
Wilmington, Calif. Delta Shipbuilding Co., Inc	1 7	Special Type ET-1 Tankers
New Orleans, La.		
Federal Shipbuilding & Dry Dock Co	1	C-2 Cargo Special Type
Kearny, N. J. General Ship & Engine Works	•	Sea-Going Tug
East Boston, Mass,		
Globe Shipbuilding Co		Sea-Going Tugs
Great Lakes Engineering Works	1	Ore Carrier
Houston Shipbuilding Corp	7	Liberty
J. A. Jones Construction Co., Inc	2	Liberty
J. A. Jones Construction Co., Inc	2	Liberty
Kaiser Company, Inc	4	Tankers
Kaiser Company, Inc	4	Special Type
Vancouver, Wash. Lancaster Iron Works, Inc	1	Coastal Tanker
Perryville, Md. New England Shipbuilding Corp	В	Liberty
South Portland, Me. Oregon Shipbuilding Corp	17	Liberty
Portland, Ore. Pennsylvania Shipyards, Inc	3	C-1 Cargo
Beaumont, Tex. Permanente Metals Corp	32	Liberty
Richmond, Calif. Pusey and Jones Corp	1	C-1 Cargo
Wilmington, Del. St. Johns River Shipbuilding Co	3	Liberty
Jacksonville, Fla. Southeastern Shipbuilding Corp	4	Liberty
Savannah, Ga. Sun Shipbuilding & Dry Dock Co	7	Tankers
Chester, Pa. Todd-Galveston Dry Docks, Inc	1	Coastal Tanker
Galveston, Tex. Walsh-Kaiser Co., Inc	1	Special Type
Providence, R. I. Walter Butler Shipbuilders, Inc	1	Special Type
Superior, Wis. Western Pipe and Steel CoSan Francisco, Calif.	1	C-3 Cargo
Jun Francisco, Cani.		



MARINSHIP LAUNCHING A MAKINGHIP LAUNCHING
Here's a seaguli's-eye-view of the launching of the 16,500-ton tanker S. S. Mission
San Miguel at the Marinship yard on October 31. Several hundred guests were present at the head of the ways as Mrs. Jack
Hardle, wife of the Sausalito yard's Ship
Construction Superintendent, broke the
Champagne on the bow of the 15th Marinship
tanker.

Pholographics of Marinship

(Photo courtesy of Marinship)

Ideas for Victory Championship

On November 1, highest honors in the United States for time-saving production ideas were awarded to Marinship, placing it first among all industrial plants of all kinds taking part in the War Production Drive.

For the first time, the national championship for "Ideas for Victory" came to the Pacific Coast, following the announcement from national War Production Drive headquarters in Washington.

Twenty-two workers at the Sausalito shipyard were awarded 23 national production honors for their outstanding ideas for the speeding of ship construction and the saving of materials. Marinship seized this honor in the face of competition from hundreds of industrial plants from coast to coast, scores of them much larger than the Marinship shipyard, which was started only 18 months ago.

The accomplishment was confirmed by Ray L. Hamilton, Marinship Production Manager and originator of the Marinship suggestion contest, which is conducted every month under the supervision of the Marinship Labor-Management Committee. Representatives of both organized labor and Marinship Corporation comprise the Labor-Management Committee.



ONE EVERY FIVE DAYS

"Battleships of the Anti-Sub Fleet".— A Nay Department name for destroyer escorts—now are being delivered at the rate of one every five days from U. S. Steel's Federal shipyard of Fort Newark, N. J. The year was especially designed and built for volume production of his new-type may be essentially designed and built for volume production of his new-type and the essentially designed and built for volume production gives the steel of the theory of the steel of the steel

First Member of the Gold Wreath Club

Oregon Shipbuilding Corporation of Portland, Ore., managed by Edgar Kaiser, has chalked up another first in ship production by winning the Maritime Commission's Gold Wreath, the Commission announced.

The Gold Wreath, awarded for the first time, indicates that the shipyard has delivered Liberty ships from all its ways in less than 105 days from keel-laying to delivery for 22 consecutive times. The wreath is awarded in place of a second Gold Eagle, and will be placed around the original Eagle on the "M" pennant.

At the same time the Commission announced that five yards have been awarded additional Gold Stars for their "M" pennants. Shipyards are entitled to a Gold Star each time they deliver Liberty's from all their ways in less than 105 days.

The Kaiser yard at Vancouver, Wash., earned its first star; Houston Shipbuilding Corporation, of Houston, Tex., won its seventh; Delta Shipbuilding Company, Inc., of New Orleans, La., was awarded its sixth; Kaiser Company, Inc., Swan Island,

Portland, Ore., won its second; and the New England Shipbuilding Corporation of South Portland, Me., earned its second and third.

Consolidated Launches Four

Eleven days of October saw four C-1 cargo and passenger vessels christened at the Pacific Coast shipyards of Consolidated Steel Corporation, Ltd., running that company's Pacific launching score up to 75 ships as of October 25

On October 14 Mrs. George J. O'Brien, wife of Standard Oil Company of California's vice president, christened the S. S. Cape Argos at the Wilmington shipyard.

Preceding launching of the Cape Argos, Alden G. Roach, president of Consolidated Steel, was presented with a four-foot model, in peacetime dress, of S. S. Cape Mendocino, first vessel launched on November 14, 1940, under the yard's shipbuilding program. Made by Oscar Fields. leadman in the carpenter shop at Wilmington, the model was presented by Art Williams, hull superintendent, on behalf of the men on the ways at that yard.

The frigate U. S. S. Muskogee was christened on October 18 by Mrs. S. B. Hudson, wife of the mayor of Muskogee, Oklahoma. Among the honored guests at that launching were Mayor Hudson of Muskogee and Frank Merriam, former Governor of California.

In a spectacular sidewise plunge, the S. S. Cape Orange took its first taste of salt water at Consolidated's Long Beach shipvard on October 22. Miss Kathleen Marie Payne, daughter of William P. Payne, a welder at that vard, christened the huge vessel, and the sponsor's sisters, Anna and Dolores, were maids of honor.

Mrs. Charles W. Lee, whose husband is general superintendent of Consolidated Steel Corporation's Wilmington Shipbuilding Division, christened the S. S. Cape Lobos on October 25. Mrs. Arthur Djerf, wife of the shipwright foreman at the company's Pico Street Outfitting Yard in Long Beach, served as matron of honor.

ON THE FACING PAGE:

- (1) The S. S. Cape Orange plunges sidewise for its first taste of salt water on Oc-tober 22 at Consolidated Steel's Long Beach Shipbuilding Division. This vessel was the twelfth ship launched from the yard.
- (2) Launched by the daughter of an e ployee of Consolidated's Long Bea shipyard, the S. S. Cape Orange we down the ways after the listly crack champagne given by Kathleen Mar Payne, sponsor. Included in the launcing party were, left to right: Willie P. Payne, welder: Anna Payne, moild honor: Kathleen Marie Payne, moild honor: Kathleen Marie Payne, sponso William P. Payne, mother of the the girls.
- (3) Present at the christening of the U.S.S Muskagee at Consolidated Steel's Will mington Shipbuilding Division on Octo ber 18 were, left to right: Frank Mer-riam, former Govenor of Califonia Mrs. S. B. Hudson, wife of the Mayou of Muskagee, Oklahoma; Miss Willie Tucker of Muskagee; Mayor S. B. Hud
- (4) On October 14, Mrs. George J. O'Brien, wife of Standard Oil Company of California, vice president, christened the S. S. Cape Argos at Consolidated Steel's Wilmington Shipbullding Division. Shown in the launching party are, left to right: Mrs. Clair Nolan, matron of honor; Alden G. Roach, president of Consolidated Steel Corporation, Ltd.
- Consolidated Steel Corporation, Ltd.

 A model of the first vessel launched under Consolidated Steel Corporation's shipbuilding program was presented to Alden G. Roach, president of Consolidated Steel, at the launching of the S. S. Cape Argos on October 14. The model is of the S. S. Cape Mendocino lister renamed S. S. Agwiprincel, 14. 1940, at the company's thou moder of the Consolidate of t
- (6) Left to right: Mrs. Arthur Djerf, wife of the shipwright foremen at Consolidated's Pico Street Outfithing Yard in Long Beach; Charles W. Lee, general superintendent of the company's Wilmington Shipbuilding Division; Mrs. Lee, sponsor of the S. S. Cape Lobos; Alden G. Roach, president of the company.



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SHIPBUILDING IN CANADA

(Continued from page 68)

ships averaging 4000 tons gross measurement.

Operation of Canadian merchant vessels is managed by a "Crown Company," which is set up by the Canadian Shipping Board for commercial dealings with Canadian shipping firms. The Crown Company takes over the vessels from the Shipping Board and arranges managerial agreements with the shipping firms, who operate the vessels in routes and trades specified by the Shipping Board.

This company is known as the Park Steamship Company, Ltd. In January, 1944, it will be handling through Canadian private steamship operators thirty 10,000-ton cargo carriers, eight 4700-ton cargo carriers and ten tankers. It is also chartering on a bare boat basis, to the Ministry of War Transport of the United Kingdom, all cargo vessels completed in Canada for which Canadian crews are not available.

In connection with post-war planning, the following extract from Mr. Howe's report is very illuminating: "Every effort is being made to obtain the maximum number of crews for the purpose of operating as many ships as possible by the Park Steamship Company, and in that connection the company works closely with the Director of Merchant Seamen, Department of Transport. During the war period, the size of the Park Steamship Company fleet will be limited only by the number of Canadian crews that can be obtained. After the war, the ships now being chartered to the United Kingdom will be returned to Canada and will then be added to our Canadian merchant marine.

"Canadian export trade in peace time consists chiefly in bulk cargoes of agricultural, forest or mineral products. The 10-11-knot ship now being built will carry these cargoes at a lower ton-mile cost than any faster ship, which would necessarily cost much more to build, operate and maintain."

YOUR PROBLEMS ANSWERED

(Continued from page 96)

The strainer "A," Fig. 16, consists of two removable baskets for straining foreign matter from the oil; two separate straining compartments, each with removable clamp cover; and between compartments, a duplex three-way valve, with jack integral for lifting and tightening the valve plug. Without interrupting it, the flow can be switched completely away from one straining compartment and its basket, and through the other compartment and basket. Thus while the oil is being strained through one basket, the other basket can be removed from its compartment in the strainer body. Each of the separate straining compartments has an opening at its top, normally closed with a tight clamp cover.

Preparation for Initial Starting

Prior to shipment the turbine is assembled, operated by steam at normal speed, balanced and adjusted. All connections of the rods and levers of the governing mechanism that are subject to adjustment are adjusted and marked with centers or tram marks. These centers or tram marks are either 1½ in, or 4 in.

During test the turbine is adjusted for regulation. It is also tested for satisfactory operation. It is then prepared for shipment by slushing the interior and exterior parts with oil or compound as may be necessary. All openings to the interior are closed with covers to prevent the entrance of dirt or abrasive material during transit.

A careful inspection should be made to see that all valve, governor gear and other exposed parts are cleaned of slushing compound, free to move, and tram adjustments have not been changed during shipment. If additional cleaning is required, use kerosene and wipe with a clean cloth. Do not use waste or similar material, as loose threads may adhere to the surface and later plug the oil lines.

It is important that the entire hydraulic system (Fig. 16), together with bearings and oil tank, be thoroughly clean and free from dirt or other foreign material before the oil tank is filled.

WINGS FOR WAR CARGO

(Continued from page 75)

the United States and Europe as well as to the British Isles, to the Belgian Congo, to Hawaii, to Alaska, and on an airway network of some 50,000 miles in the West Indies, Central and South America.

The military services, operated with military transport aircraft, cover routes assigned by the A.T.C. and the N.A.T.S. in accordance with changing requirements of world strategy.

In one single operating division, established to perform services assigned by the Air Transport Command, Pan American Airways has 106 flight crews expert in 4-engined aircraft operation. This Division alone was revealed to be flying 1,-250,000 miles a month, carrying overseas cargo at the rate of 3,500,000 ton miles every 30 days.

While aircraft operated by Pan American flight crews regularly touch the five continents, it was recently made known for the first time that one of the 700 special missions which have been flown for the military took a Clipper completely around the world, and included the first aerial crossing in history over the Indian Ocean direct to Australia.

CHINA CLIPPER

The best-known commercial airplane in the world, China Clipper, on November 22, 1935, inaugurated transpacific air service.

On that date she departed from San Francisco Bay and landed at Manila six days later, after 59 hours and 48 minutes in the air.

China Clipper, built in Baltimore at the Glenn L. Martin plant, took to the air there in December, 1934, and since that time has flown one and three-quarter million miles.

LUNNING

Who When Where

Edited by B. H. Boynton



Newly elected President, Fred L. Doelker.

New Skipper!

At the November meeting of the Propeller Club of the United States, Port of San Francisco, election of officers was held with the retiring president, Hugh Gallagher turning the gavel over to the newly elected president, Fred L. Doelker, for the 1943-1944 administration. Mr. Doelker, Pacific Coast manager and vice president of the Grace Lines, was elected president of the club at the Wednesday meeting, November 17.

Eugene F. Hoffman, of the American President Lines, was re-elected secretary-treasurer. Other officers elected were: George Armes, president of General Engineering & Dry Dock Co., first vice president; William J. Bush, vice president and operating manager of American President Lines, second vice president; and Harry Ewing, Pacific Coast manager of Luckenbach Steamship Co., third vice president.

U. S. Coast Guard Day was the theme of the meeting with Rear Admiral E. D. Jones, U. S. C. G., coordinator for the Port Security of the Pacific Coast ports and Hawaii as guest speaker. In his address to club members on "The Port Security Program," he particularly stressed what is being done to safeguard shipping from its two main enemies, sabotage and fire.



Two types of safety uniforms, smart as well as practical supplied by the Electromaster Inc. of Detroit.

New Employee Safety Benefit Program

Electromaster Inc. of Detroit has announced the inauguration of a new employee program. This plan provides free life and family hospitalization insurance as well as safety uniforms and shoes for all employees at company expense.

Under the new program, life insurance and complete family hospitalization insurance is provided for all employees without charge. Two safety-type uniforms, good-looking as well as practical, are to be supplied. The uniforms consist of a gabardine shirt and slack combination with enclosed buttons. Women workers will have attractive safety hats, adjustable to the hair-do. Approved safety-type shoes with protected toe will be furnished, and both uniforms and shoes will be replaced as required.

Victor Takes on Thomson-Gibb Line

Victor Equipment Company, with offices and warehouses in San Francisco, Los Angeles, Fresno, San Diego and with numerous other distributing points on the West Coast, has taken on the exclusive distributorship of the Thomson flash and spot welders in the state of California, Nevada and Arizona.

The Thomson-Gibb Electric Welding Company of Lynn, Massachusetts, produces a very complete line of spot, butt, flash, seam and special types of electric welding machines in all useful sizes and for practically all purposes to which these types of machines are adaptable. Thomson not only has a most comprehensive range of equipment, but its experience comes from pioneering almost every resistance welding development since Elihu Thomson invented the process in 1886.



Dr. Nathaniel L. Baum, head of the new organic resarch laboratory at Turco Products, Ins.

Organic Research Lab Expert

To keep pace with new problems in the marine industry, and allied fields, an organic research department has been opened in the Turco Los Angeles laboratory, according to S. G. Thornbury, president of Turco Products, Inc. Dr. Nathaniel Baum has been appointed head of the new department.

Turco manufactures more than 225 specialized industrial chemical compounds, many of which are used in the marine industry.

Appointed Field Representative

Appointment of J. C. Lewis as field representative for the states of Arkansas, Louisiana, Texas and Oklahoma has just been announced by Drayer & Hanson, Inc., Los Angeles, California, manufacturers of Heat Exchange Equipment.

Coast WSA Moves to New Offices

The Pacific Coast offices of the War Shipping Administration and certain allied activities are doing business at a new stand. They are now located on the fourth floor of the Mills Tower and the Mills Building, 220 Bush Street, San Francisco.

Removal from the neighboring 200 Bush Street was undertaken in line with an expansion of activities entailed in operating and handling the greatly enlarged Pacific merchant fleet. The direct and related activities, now handled by a personnel of about 250, include operating and allocating ships, procurement of crews, finance and stevedoring

and stevedoring.

With these changes Deputy War Administrator John E. Cushing and various other key shipping and maritime officials will be located at 220 Bush Street. These include Pacific Coast Director W. C. Peet, Jr., WSA; District Manager E. C. Musshardt, Maritime Commission, and Chairman Paul Eliel, Pacific Coast Maritime Industrial Board.

Parsons Represents Heat Transfer Products

The Harry W. Parsons Engineering Company of San Francisco, California, has recently been authorized to represent Heat Transfer Products, Inc., New York City, in the sale and service of the complete line of surface condensers, evaporators, heat exchangers, steam jet air ejectors and allied equipment produced by H-T-P. The production facilities thus offered to the West Coast through the Parsons organization include plants at Carbondale, Pottstown and Honesdale, Pennsylvania.



Mr. E. A. Bertram has recently been appointed General Manager of Heat Transfer Products, Inc.



Los Angeles manager of C. J. Hendry Company, the ship chandlers and marine supply firm is Al W. Johnson, who took time out to pose for our roving photographer. The Hendry organization takes care of the interests of National Malleable Steel Casting Company.

This corporation deals in special patented Universal Joints for remote valve controls, operating gears, and various other mechanisms of ship machinery, together with all accessories such as brackets, hangers, yokes, couplings, etc., leather covers, and in addition, carry a stock of standard block or knuckle joints.

No Lost Time

Employees of Western Gear Works, Seattle, were recently presented with this "No Lost Time" pin. Only workers who had not lost any time whatsoever were eligible. Seventy-five workers received the sterling silver pins. Those who maintain their perfect attendance for a period of a year will be presented with gold pins.

The pins were presented by Thos. J. Bannan, Executive Vice-President and General Manager of Western Gear Works on the occasion of the renewal award of the Army-Navy "E" flag. Western Gear has one of the best attendance records in the Puget Sound area and it is believed that the pins will have a good effect in maintaining the company's high percentage of attendance.

Port of Los Angeles-Long Beach Propellers' Luncheon

The Pacific Coast Club, Long Beach, was the gathering place for the Propeller Club of the United States Port of Los Angeles-Long Beach on November 17, when Col. James K. Herbert, Port Commander, Los Angeles Port of Embarkation, was guest and principal speaker to an interested group of club members. In attendance were several of Col. Herbert's staff officers. Another feature on the November program was the reports from two of the club's Board of Governors, Eloi J. Amar

and Ralph J. Chandler who attended the recent American Merchant Marine Conference and the 17th Annual Meeting of the Propeller Club of the United States in New York City.

Expanding in Los Angeles

The Brooks Equipment Corporation of California have found it necessary to move to a new location at 1159 South Hill Street, Los Angeles, opposite the Chamber of Commerce, because of an increase in the volume of business in the Southern California area connected with the war effort and especially the shipbuilding trade.



Redskin Visits Webster-Brinkley



Gold Star to the Wm. Powell Company

James Coombe, president of The Wm. Powell Company, announces he has been notified by Admiral Vickery, Chairman of the United States Maritime Commission, that the Powell Company has been awarded a gold star to be added to the Maritime "M" Pennant which was presented last May. This is in accordance with the Commission's practice of granting an additional gold star every six months to companies whose production performance merits the award. In addition to its gold-starred Maritime "M" Pennant the Powell Company has also won the Victory Fleet Flag and the Army-Navy "E."

The scene at left is from the day in the shaps of Webster-Brinkley Co., Seattle, when a Sioux Indian Chief marched up and down the aisles with stoical mien. Here his reply to Earl A. Osburn, machinist, was the same made throughout the day, "Halo Wawa," meaning in his tongue, "don't talk." The stunt used to impress workers of the necessity of sience.

The Chiselers Club, Todd Shipyards, New York



His many friends on the Pacific Coast will be glad to see that Henry (Heinie) Gelhaus, formerly port-engineer for Swayne & Hoyt at San Francisco and now Vice President, Todd Erie Basin Dry Docks, is enjoying himself in New York and keeping in trim as a bowler. His club has won the Todd Championship at that ancient pastime.

Soule Awarded the Pennant

Before a large and enthusiastic gathering of Soule war workers and their families, business and cryc leaders and Army and Navy officials, Rear Admiral W. I. Friedell, Comman dant, Mare Island Navy Yard, made the presentation of the Army Navy "T" Award for "Execultence in Production" to the San Francisco plant of Soule Steel Company on November 19.

In presenting the Burgee, Admiral Friedell pointed out that less than 3 per cent of the war plants in America have qualified for this distinction, and praised the cooperative spirit that exists between the company's employees and management.

In his acceptance talk, Edward L. Soule, president and founder of the company, stated, "Never before in any war have the men on the production line borne such a responsibility to the men out on the firing line. Our part here has been the construction of landing barges—building "bridges to victory" between the mother ships and the beachheads. During those

last few tense moments before the zero hour just as the barge is grounded on the beach—the fighting men of America... your sons, brothers, neighbors—are entrusted to the care of Soule war workers. Our work cannot be compomised—for war grants no second chance."

Ohio Plant Wins "E" Pennant

The Centrifugal Castings Division of Shenango-Penn Mold Company was awarded the Army-Navy "E" Flag at a brief ceremony held at its Dover, Ohio, plant on October 12, 1943.

Commander A. G. Mumma of the Bureau of Ships in Washington, D. C., made formal presentation of the flag, officially accepted by H. S. Bradley, president of the company.

The company has been a leading producer of centrifugal castings for many years—working in bronzes of various kinds, brass, copper, nickel, aluminum, iron, semi-steel and other alloys.

Stud Sticker Steals Show



Feature of the exhibits at the National Metal Congress was the demonstration of the Nelson Specialty Welding Equipment Co. of Oakland, Calif., electric arc stud welder, shown here welding an overhead installation of Fiberglas insulation board.

Centrifugal Castings Division Wins Coveted Award



Commander A. G. Mumma, of the Bureau of Ships in Washington, D. C., shown here after presenting the Army-Navy "E" flag to H. S. Bradley, president of The Centrifugal Castings Division of Shenango-Penn Mold Company.

Edited by Jerry Scanlon

Chief Honored for Heroism

'For heroism above the line of 54-year-old Michael Stevens, chief engineer of a cargo vessel, who formerly resided in Hillside, New Jersey, was awarded the Merchant Marine Distinguished Service Medal. Captain Granville Conway, regional director of the W. S. A. and district manager of the Maritime Commission in New York, made the presentation

Chief Engineer Stevens' ship was hit directly under the boilers by an enemy mine. The fireman on watch was blown on top of one of the engine room cylinders where he lav helpless from grave wounds and severe body burns. With the sea rushing into the engine room through a great hole on the ship's bottom. Stevens went below and dragged the helpless fireman to safety. The fireman ultimately recovered.

CAPT. WM. H. WEAVER



Page 110

San Francisco shipmates of Captain William "Bill" Weaver, one of American President Lines outstanding skippers, had a chance to entertain the popular officer and congratulate him on his promotion to full commander of the United States Navy during his Thanksgiving stay

Captain Weaver, who entered the Navy shortly after Pearl Harbor, has won commendation from his superior officers for his services.



RICHARD E. "DICK" KELLER

Moore Promotions

Edward "Ed" Schneider has been appointed Senior Estimator for repair jobs of the Moore Dry Dock Company by Joseph A. Moore, Sr. The popular young executive has won his promotion through indefatigable efforts, especially during the last two strenuous years of the war. He has been with the company for seven years, the last two being in the California Street offices.



EDWARD "ED" SCHNEIDER

Through his office as vice president of the Junior Chamber of Commerce, Ed gained a wide acquaintance and valuable efforts in numerous affairs won him the praise of his co-

He is a graduate of the University of California and is a member of the Society of Naval Architects and Engineers.

Richard E. "Dick" Keller, is another of the younger executives coming up the ladder at the Moore Dry Dock Company. He is now right hand man to Neil Flood, West Yard Plant Engineer. "Dick" started with the company as a member of the purchasing department. He was at one time purchasing agent for the Hogan Lumber Co.

Shipping and Shipbuilding Personalities

A. C. Hoffmeier was elected as sistant treasurer of the American Shipbuilding Company at a recent meeting of the directorate. He is well-known in Pacific Coast matrix construction circles.

Julius Kruttschnitt, who was associated in the passenger department for the McCormick Steamship Company for many years and who went to South America three years ago, has somed the American Smelting & Refining Company with headquarters in Mexico. According to reports he will serve as transportation manager. He is a grandson of the late Julius Kruttschnitt, one-time chairman of the board of the Southern Pacific Railway Company.

His many friends on the Pacific Coast learned that G. W. Blair, formerly with the Ingalls Shipbuilding Company at Pascagoula, Miss., has joined the J. A. Jones Construction Co. at Panama City, Florida, as works manager of the Wainwright yard.

Anson G. Phelps, traffic manager of the Standard Oil Company of New Jersey, has just retired under the company's annuity plan after forty-two years of service. Edward D. Sheefe, assistant traffic manager, advanced to fill the vacancy. Phelps started with Standard Oil as an office boy in 1901 and has been traffic manager since 1933. Sheefe is a veteran, having started in 1912. He has handled many cases for his company before the Maritime Commission in his capacity as registered practitioner.

E. J. "Bud" Judge has been promoted from a lieutenant to a Captain in the United States Army. Before the war he was in charge of the passenger business for the Grace Line in San Francisco.

Joseph S. Wilson, who came to the West Coast regional offices of the U. S. Maritime Commission as assistant director under Carl W. Flesher, has resigned. He is returning to his home in Wilmington, Delaware, to resume the practice of law. No successor to Mr. Wilson has yet been announced.

Dr. Henry F. Grady, president of the American President Lines, before leaving for Italy under orders of President Roosevelt, announced the advancement of three ranking and popular officials of the company. E. R. Littz is executive vice president: William J. Bush, vice president and man cer of operations, and Thomas E. Cuffe, vice president in charge of Atlantic Coast operations.

The Toll of War

The part played by the merchant seamen in World War II will form a brillhant chapter in this nation's history. To date, the records of the War Shipping Administration show that nearly 4800 merchant seamen have been listed dead or missing in combat action since Pearl Harbor, while 547 others are known to be war prisoners.

Army Promotion

Lieutenant Reginald Del Valle Grady, U. S. Army, son of Dr. and Mrs. Henry F. Grady of San Francisco, has been promoted to the rank of Captain, according to a message received from Washington.

After serving in Egypt for a year, young Grady was returned to the United States in June, 1943, where until recently, he was stationed at Camp Ellis, Illinois, attached to the staff of Major General Russell L. Maxwell, as aide to the General. It is understood that Captain Grady will leave shortly for another overseas assignment.

Captain Grady, who attended school in Berkeley, and is well known in the Bay Area, visited recently with his parents in Washington, D. C., where Dr. Grady is currently on business for the American President Lines, of which he is president.

Tribute to Coulter

Honor was paid the memory of William A. Coulter, one of America's outstanding marine artists, when a Liberty ship, built at Richmond shipyards, was christened with his name.

Hundreds of paintings from the brush of the gifted artist are known to lovers of ships and marine vistas. Among his famed paintings are several panels that adorn the walls of the Marine Exchange in San Francisco. His most famous and regarded as his best work is that of the "Burning of the Blue Light" done in his studio in Sausalito, across the bay from San Francisco.

Awarded Silver Star Medal

Employees of the Pittsburg Works of Columbia Steel Company were proud to learn that a former fellow worker — Lieutenant Commander Charles C. Morgan, U. S. N. R.—has been awarded the Silver Star Medal for conspicuous gallantry in action in the South Pacific.

The thirty-three-year-old Annapolis graduate left his position of Industrial Engineer of Pittsburg Works in April, 1941, to return to active service with the Navy. The citation, accompanying the award, which was signed by Admiral W. F. Halsey, read as follows:

"For conspicuous gallantry and intrepidity in action against the enemy while serving as the Commanding Officer of a destroyer-transport during operations against New Georgia Island, British Solomon Islands, on June 25, 1943. Lieutenant Commander Morgan assisted in the transporting of troops and supplies in advance of the main attack and in the face of heavy enemy fire in order to secure a beachhead in a vital area. On this operation his ship carried out the mission at a time and in a place where no naval support could be given him. By his skill, courage, and determination, he completed the mission without loss or damage to his ship. His conduct throughout was in keeping with the highest traditions of the United States Naval Service."



Lieut. Comdr. Charles C. Morgan, formerly industrial engineer at the Pittsburg, California, Works Division, Columbia Steel Co., was awarded the Silver Star Medal.



Commander Easton of Skinner Engine Company, Erie. Pa.

Sea Scribes in Service

J. Norman "Jack" Densham, waterfront columnist on the San Francisco and Hawaiian newspapers for a quarter of a century, writer, deep sea sailing ship sailor and former member of a British submarine crew during the last war, is now shore-side as manager of a San Francisco hotel.

Edward Peltret, one-time waterfront editor of the San Francisco Chronicle, is now a member of the San Francisco Examiner staff.

Frank W. Smith, Maritime Editor of the San Francisco Examiner, is going to sea and so is Carl Latham, another waterfront Chronicle scribe who has just been commissioned as ensign from the Alameda Maritime School for Officers. He is now on one of the W. S. A. ships.

Edward Dougerie, another ship news-editor on the Chronicle, is a lieutenant in the Navy on overseas duty, while Lewis A. Lapham, who handled the marine news for a time for the Examiner and who is the son of Mayor-Elect Roger Lapham, is now attached to the staff of Major General Gilbreath, in charge of the San Francisco Port operations.

Waldo Drake, a veteran marine editor of the Los Angeles Times, stationed at San Pedro, is now a Commander in the U. S. Navy. A member of the Naval Reserve, he has been in service since before December 7, 1941, and was at Pearl Harbor during the Jap sneak attack.

Comdr. Wills Named Captain in Navy

Commander Bernard O. Wills, U. S. N. R., of 499 Marina Blvd., San Francisco, has been promoted to Captain, the Twelfth Naval District recently announced. Captain Wills' supervision of the vast operations movements for shipping from the Twelfth Naval District has brought him attention from high naval sources who have recognized his work as "outstanding." He directs the immediate shipping operations of San Francisco's port from where supplies, equipment and men move to the Far Eastern war zones.

Yangtze Pilot Comes Home

After being a prisoner of the Japs, Captain Werner Tornroth returned to San Francisco as an exchange passenger aboard the liner Gripsholm after an absence of 23 years. He was met in New York by his daughter, Mrs. Gus. Farber of 1990 Beach Street, San Francisco, who accompanied him West.

In 1920, Captain Tornroth left San Francisco to become a Yangtze River pilot. He served as master of the river steamer Alice Dollar until 1923 when he was injured in a melee with Chinese bandits.

Captain Tornroth said he would take a vacation before seeking command of another ship.

W. S. A. Appointments

Captain Edward Macauley of the War Shipping Administration announced the appointment of Percy Chubb and Commander Edmond J. Moran, USNR, as assistant deputy administrators, and in turn, transferred Assistant Deputy Administrator Richard W. Seabury to head the new division of maintenance and repair.

Ship Shifts

Reynold Nomme was relieved as first assistant on the S. S. Cape Constance by Richard Rivers; Martin Forseth went as third assistant, relieving Mitchell A. Morgan. Other changes on this vessel while in a Pacific port were: John D. Dickson, formerly third officer, was promoted to the second's berth, relieving James C. McNiff; Roland A. Rogers went as third mate, relieving David A. Constable.

Captain Clifford C. Weidemann succeeded Captain Karl J. Staus as master of the S. S. Charles F. Amidon. He was formerly skipper on the S. S. Philip F. Barbour.

Chief Engineer Frank Coleman left the S. S. George Abernathy at an East Coast port as did Second Assistant Frank Lynch.

Captain T. K. Oaks, widely-known Pacific Coast shipmaster, relinquished command of the S. S. Joseph Mc-Kenna at an East Coast port and came to the Pacific Coast for further orders. Others who left the ship at the same time include: A. Josephson, second officer; B. R. Logan, third officer; J. J. McBride, first assistant; Clarence Dozier, second assistant, and Earl Reed, third assistant.

Chief Steward Dies

Word was received of the death in Liverpool, England, of John H. King, senior chief steward of the United States Lines. Mr. King served as head of the cuisine department on all of the largest United States Line carriers and was widely-known to Pacific Coast marine men. He recently returned to sea on a Government vessel after being shore-side as port steward since the start of the war.

Exchange Loses Statistician

The death of Arthur "Artie" Beyers on November 20, after eight years' illness, was the loss of another veteran of San Francisco Bay marine fame. He was 65.

Few figures in the shipping business were held in more affectionate and high esteem than Artie Beyers, who served over a period of more than forty years as a lookout, and until forced by illness to resign his post, as chief statistician for the Marine Exchange.

Sea captains, mates and engineers on ocean liners, tugboat and bay skippers all knew him. He started his career pulling a white-haul boat to meet incoming ships under the late Jerry Dailey and Henie Benges, two of the most colorful figures identified with Pacific shipping. Many ranking newspaper editors and internationally famous writers were helped along by Artie in their neophyte days and with his passing, members of the Fourth Estate who knew and valued his friendship, received his passing with the sincere regret that all who knew him felt.



Down by the head with decks awash

... Torpedoed C-1 made port

It happened just after sunset, off the African coast. A C-1 cargo vessel was moving through a turbulent sea, her holds crammed with war materials, locomotives lashed to her decks.

The torpedo struck without warning. The vessel staggered, water pouring into a huge hole in her foreward hold. Almost instantly her bow began to settle. Waves frothed around her anchors, then swept surging over her forward decks. To the U-boat captain, surveying his victim through a periscope, it must have seemed that the ship was ready for her final plunge. No more torpedoes were fired.

Night fell. Shrouded in darkness, the stricken vessel, which was now completely down by the head, struggled slowly through the heavy seas. The captain ordered most of the crew into lifeboats until it could be determined definitely that the ship would remain afloat. All night the lifeboats stayed close by while the captain, chief engineer and several volunteers stayed with the ship.

Her bulkheads held the ocean out of her engine rooms, gave her enough buoyancy to remain afloat. In the morning all hands returned and began the risky and strenuous task of continuing the voyage. Days later, after a snail-paced trip through hostile waters, the ship made port.

This vessel, like many another ship now supplying our men on the fighting fronts, was built by Bethlehem Steel Company. After delivering her cargo she returned to this country under her own power, and damage caused by the torpedo is now being repaired in a Bethlehem yard.

Her performance speaks in itself for the design standards and workmanship which built her and the courage and skill of the men who handled her. We of Bethlehem follow our ships with interest during their lives at sea. When one of them turns in an outstanding performance we feel very real satisfaction in a job well done.



Trade Personalities

Changes in Management

Changes in the Gustin-Bacon Manufacturing Co. of Kansas City management personnel took place recently. A. L. Gustin, Jr., succeeds his father, A. L. Gustin, Sr., deceased, as President. J. F. Stephens, general manager of the Industrial Department, is Vice President, and J. D. Simons was elected to the Board of Directors. All other officers of the company to remain in their former capacity.

New Executive Offices

Action of the Board of Directors of Pope & Talbot, Inc., established the office of Executive Vice President by combining the office and duties of First Vice President with that of Vice President and General Manager of the Lumber and McCormick Steamship Divisions.

The Executive Vice President was also authorized to assume the duties of the president during the president's absence on leave. Major George A. Pope, Jr., president of Pope & Talbot, Inc., now on leave, is in the Army of the United States.

Charles L. Wheeler, formerly Vice President and General Manager of the Lumber and McCormick Steamship Divisions of Pope & Talbot, Inc., was elected to the office of Executive Vice President.



Chas. L. Wheeler of McCormick Steamship Co.

Heads New Department Of Westinghouse

Mr. Charles H. Weaver has been appointed manager of the newly formed Marine Department of Westinghouse Electric & Manufacturing Company and will direct all commercial activities. This responsibility includes the coordination of marketing of the diversified products of the Company that are used for marine service.

Mr. Weaver, as former manager of the Marine Section of the Industrial Department, is well known in the marine industry.



C. H. Weaver, Manager of the newly formed Marine Department of Westinghouse.

GE Wins Second White Star Award

The Honorable Robert P. Patterson, Undersecretary of War, has informed H. L. Andrews, vice president of the appliance and merchandise division of the General Electric Bridgeport plant, that for the second time the G-E Bridgeport plant has won the Army-Navy White Star award for meritorious services on the production front.

Mr. Patterson's letter stated: "You have continued to maintain the high standard that you set for yourselves and which won you distinction more than six months ago. You may well be proud of your achievement. The White Star, which the renewal adds to your Army-Navy Production Award flag, is the symbol of appreciation from our armed forces for your continued and determined effort and patriotism."



R. C. Cairns heads up Tri-State Supply Corporation's Seattle territory.

Seattle Office Opened

C. F. Bowers, president of the Tri-State Supply Corporation, has recently announced the appointment of R. C. Cairns to head up the Seattle territory of the company. The Seattle office is located at 318 Occidental Avenue, Seattle 4, Washington.

The additional warehousing facilities will afford a ready supply of wire, brushes, commutators, varnishes and other items needed in the manufacture and maintenance of electric motors, transformers and generators to the industries of Washington, Oregon and Idaho.

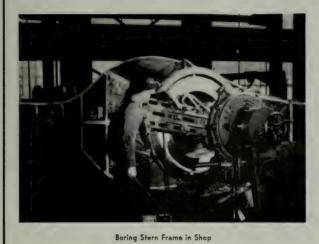
The Tri-State organization was founded in Los Angeles in 1933. Since that time their expansions have kept pace with the growing industrial West. The new Seattle office and warehouse complements similar offices and warehouses in San Francisco and Los Angeles which serve California and Nevada and Arizona.

A Star Awarded to John Reiner & Co.

On February 20, 1943, John Reiner Company, Long Island City, N. Y., was awarded the Army-Navy "E" Flag for excellence of performance in the production of diesel auxiliary units and generating sets for use aboard many classes of ships and by the Army in several phases of its work. Taking the award in stride, management and workers continued their efforts, striving to surpass previous records. On October 29, 1943, the first star was added to the flag in recognition of their continued good work.

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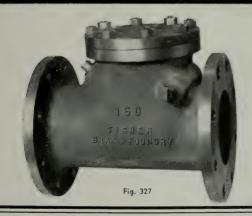
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A BOAT AND AIRPLANE CRANE

A boat and airplane crane, the machinery for which was designed and built by Western Gear of Seattle, undergoes tests during installation on a submarine tender at Moore Dry Dock in Oakland. The machinery incorporates features not used on previous lifting devices of this nature. Deviations are based on past experiences of other vessels. The equipment consists of a main winch, which tops and lowers the boom; a boat winch, an airplane winch and rotating machinery. All of this equipment is mounted on a series of three rotating platforms, which mount upon and revolve about a fixed, vertical king post. A feature of the machinery is its extreme simplicity of control, which makes the crane as easy to operate as an automobile. Designed for a normal operating load of 45,000 pounds, the crane has attracted considerable attention in marine circles because of its many novel features.

Some Twelfth Naval District Launchings

The U. S. S. Bowers, named for the late Ensign Robert K. Bowers, USNR, pilot of an observation plane aboard the U. S. S. California, who was killed in the Japanese attack on Pearl Harbor, a destroyer escort launched from the Bethlehem Steel yard at San Francisco, was sponsored by Mrs. E. Bowers, Ellensburg, Washington, mother of the late ensign.

A new fleet mine sweeper, U. S. S. Rebel, was launched at the General Engineering and Dry Dock Co., Alameda, on October 28, sponsored by Mrs. C. E. Guisness of Alameda, wife of Commander Carl E. Guisness, Commanding Officer of the U. S. Coast Guard Base, Alameda.

U. S. S. Tawakoni (name of Indian tribe in Texas), a fleet tug built at United Engineering Company, Alameda, was launched on October 28

A frigate, the U. S. S. Brownsville, was launched on November 14 at the Richmond Shipyard No. 4 yard. Sponsor of the vessel was Mrs. J. H. Burney, selected by the mayor of Brownsville, Texas, to represent the city at the launching.

BOOK REVIEW

National Fire Codes for Flammable Liquids, Gases, Chemicals and Explosives, 1943

This 504-page volume, recently published by the National Fire Protection Association, appears at a most propitious time, when the war is demanding enormous quantities of these materials, whose fire and explosive hazards are fought with great danger to human life and property. The book brings together the many standards dealing with these hazards. It supersedes the National Fire Codes for Flammable Liquids and Gases, Edition of 1938.

This new volume is divided into 9 parts, as follows: Flammable Liquid Storage and Handling; Oil and Gasoline Burning Equipment; Liquefied Petroleum Gases; Utilization of Flammable Liquids; Gases; Refrigeration and Fumigation; Explosive and Nitrocellulose Materials; Tables of Properties—Hazardous Chemicals, Flammable Liquids; Flash Point Tests.

The several codes are in the form of suggested ordinances, standards or recommended good practice requirements. They are universally recognized and used as the authoritative guides to the best practice. Irrespective of their form, the codes are purely advisory as far as the N.F.P.A. is concerned. They are, however, widely used as a basis of law, or by administrative authorities in the exercise of their discretionary power, as well as by property owners as a guide to good practice, and for insurance purposes. In preparing all standards, the aim of the N.F.P.A. committees has been at specifying measures that will provide reasonable fire safety without prohibitive expense or undue inconvenience.

The book contains many tables and drawings. Pages size 6 x 9, bound in substantial red cloth covers. Price \$3.00 per copy postpaid. National Fire Protection Association, 60 Batterymarch Street, Boston, Massachusetts.

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W. H. M. Porter

Northwest Trend to Diesel

Two important and significant trends in the Northwest marine diesel industry are reported by W. H. M. (Bill) Porter, district manager of the Enterprise Engine & Foundry Company in Seattle, Washington.

Mr. Porter observes that in order

to aid with wartime food production and to improve the peacetime fishing fleet, many diesel-powered fishing craft are being built in Puget Sound yards. At the same time, post-war construction of diesel-engined freight and passenger vessels for the anticipated enlarged trade with Alaska is being given serious consideration. The use of diesel propulsion power for ships in this commerce started a few years prior to the war, with the Northland Transportation Company, one of the pioneers.

During the past two or three years Mr. Porter has been traveling extensively supervising diesel installations in an area extending from Victoria, B. C., to Coos Bay, Oregon, with the addition of two trips to Connecticut to work on some naval diesel installations.

While he says that in early days he met considerable skepticism concerning diesel engines in the Northwest, the splendid work being performed by this type of power during the war is broadening the field and he believes the diesel industry is in its infancy.

Although most of his work is considered vital military information, one of the most interesting recent installa-

tions was fitting an Enterprise 2000horsepower engine in a twin-screw tug operating in the upper reaches of the Columbia River hauling highoctane gasoline. At the present time, 20 tugs in Northwest yards, destined for duty from Nome, Alaska, to Australia, are being powered with 1200-horsepower Enterprise diesel engines, as are many types of smaller craft.

Rebuilding Machines by Metal Spray

Under current conditions, it has become impossible to depend upon replacements to keep even vital machine tools in operation. When new parts are available, it inevitably takes many weeks before they can be delivered-during which time equipment must lie idle unless satisfactory methods of salvaging old and worn parts are readily available.

Machine Tool Rebuilding Impossible Without Metallizing

In the Metallizing Engineering Co., Inc., plant at Long Island City, New York, hundreds of man and machine hours would have been wasted over the last year or so but for metallizing. As a matter of fact, their present machine tool rebuilding program would not be possible at all without metal-spraying equipment. Working now almost continuously for 55 hours each week, it is restoring worn parts to service within a few hours after they are disassembled. Total time out has been cut from weeks to days.

New Replacement Would Have Required 10 Weeks

A typical example was the main spindle of a 14-inch by 36-inch Norton plain cylindrical grinder. This spindle weighs 79 lbs., is almost 35 inches in length, with journals 3.890 in, and 2.188 in, in diameter, operating in adjustable taper split bronze bushings. It carries a 24-in.-diameter by 2-in.-face grinding wheel on a steel mounting, and a 2-step pulley for belt drive. Operating speed is 900 and 1050 rpm respectively.

On inspection, bearing surfaces showed deep scars, and the spindle was found to be .002 to .005 in. out of round. Delivery of a replacement could not be promised in less than 8 weeks, and to this would have to be added another 2 weeks for assembly, scraping and other operations.

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Official U. S. Navy Photograph



The cruiser San Francisco gallantly performed a feat of running the gauntlet between two rows of Japanese warships and sank with deadly gun fire the pride of Hirohito's fleet. Although badly damaged, her bridge shot away and her heroic commander killed, the San Francisco's Lidgerwood steering gear kept her on an accurate course and she soon eluded the enemy. Quick response to the steering gear and its general ruggedness all played their part in this exceptional victory.



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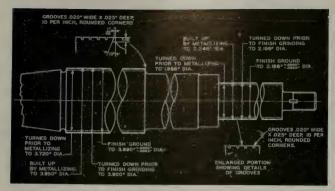


Diagram showing dimensions of spindle journals during the various steps of preparing, spraying and finishing.

Cost of the part in oversize was quoted at \$164.

Previous Methods

Previously the company had been confronted with a similar problem. In one instance the spindle was ground and fitted into new bronze sleeves. Sleeves had taken 9 weeks to deliver and the total cost completed was \$124. On another grinder they scrapped the worn spindle and had a new one made. Sleeves were rebored. Total cost was \$157. Even so, it was 10 days before the new spindle was delivered.

Metallizing Saves Time and Money By turning to metallizing in the plant for the third spindle, not only did they save considerable money, but, of still greater importance, completed the entire work themselves within 4 days at a total expenditure of only \$65—including reboring the sleeves and furnishing them with oil grooves. All this was done according to Schlesinger standards, which allow no greater tolerances than those applied to new machine tools.

Preparing and Spraying Grinder Spindle

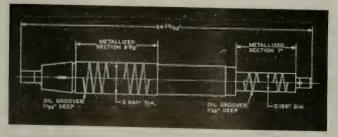
After recentering the spindle, a 1/32-in, cut was turned off in two

journals, followed by threading 10 threads per inch. Threads were .020 in. wide and .025 in. deep, were made with a rounded straight threading tool. The grooved surfaces were then treated with the Metco Rotary Shaft Preparing Tool. Immediately after preparation, Sprasteel No. 40 was applied with a Metco Type 2E Gun—to a thickness of .115 in. and .030 in. on the two radii, 9 lbs. of metallizing wire were used for the two journals.

Finishing Steps

In finishing the metallized areas, a Carboloy tool was first used, at a cutting speed of 25 feet per minute on the large diameter and 14 feet per minute on the small. Depth of cut was .050 in. The journals were then finished to original dimensions by wet grinding on a cylindrical grinder. An 18-in.-diameter, 30-grit, 401K wheel was used at 7000 surface feet per minute and a work revolving speed of 68 rpm. Turing, threading and knurling took 41/2 hours. Metallizing required 7 hours. Finish turning was 31/2 hours and 7 hours for grinding. Grinding was considered essential for the close tolerances and high finish required.

Complete spindle, showing areas metallized with Sprasteel No. 40



Molded Stern Tube Bearings

Integrally molded bearings of resin-bonded fabric for stern tube and strut applications that are too small for the convenient use of stave type bearings are being made by the Gatke Corporation, Chicago, Illinois.

This development is based on long experience with Gatke resin-bonded fabric bearings in service on river boats, tugs and hydraulic dredge cutter shafts—applications where these tough wear-resistant bearings give wonderful results despite extremely severe sand and grit conditions.

Controlled arrangement of materials with efficient application of heat and tremendous pressure through special molds produces density, toughness and uniformity not attainable in bearings cut from pre-molded slabs or tubes. The dense, tough structure has smooth wearing quality and tremendous wear resistance. Surfaces formed by the molds hermetically seal against absorption. Even



the lubricating grooves are molded, affording deep, glass-smooth channels with rounded corners for free flow of water and quick removal of sand and grit.

These bearings are non-corrosive and unaffected by oil, grease, or most organic chemicals. They may be used in oil-covered water, or shafts may be packed in grease without the slightest harm to bearings. The bearings do not deteriorate or change dimensions with age and exposure. Spares may be carried indefinitely without special packing or protection. Many special features that facilitate installation economy are made possible by Gatke methods of molding the bearings as integral units.

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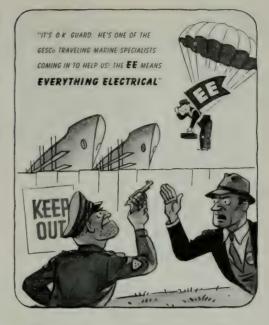
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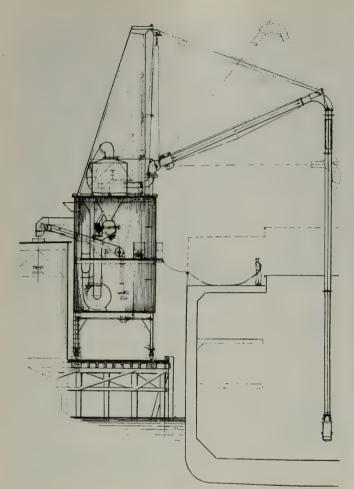
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Cross-section elevation of preumatic

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zle, attachments are provided at the nozzle for adding clean up hose for handling material on the floor and between decks.



THE "LAZYMAN"

Speed-up in production of America's "bridge of ships" will result from this typical example of Yankee ingenuity, a gadget called the "Lazyman," invention of Evert Dustman of Bardonia, N. Y., night-shift snapper in armature division of Erie Basin electrical shop of Todd Shipyards Corporation. Heretofore when holes were to be drilled in overhead plates, ladders or complicated scaffolding had to be set up, at considerable loss in production time. The "Lazyman," an electric drill mounted on a long pole adjustable to any height, is conveniently operated by food pedal, performs most difficult drilling job with dispatch and celat!



Pneumatic Marine Unloader

(Courtesy of Compressed Air Institute)

One of the larger tidewater facilities for unloading ships, according to the Compressed Air Institute, is the portable pneumatic unloader installed at the plant of Spencer Kellog & Sons, Long Beach, California.

For producing a partial vacuum and material-carrying current of air into the nozzle and through the conveying line to the receiver, a 200-horsepower, two-stage turbo blower, acting as an exhauster, is used.

This installation has a capacity of 120 tons per hour of flax seed and grain from hold of ship to belt within warehouse, discharging onto

this belt through a multiplicity of hatch openings in the roof.

The entire unit is self-propelling, so that it is unnecessary to move the ship to get at the various holds. With a boom that raises and lowers through an arc of 45 degrees, combined with a 30-foot telescopic action, working range of the nozzle is about 60 feet. This accommodates for any size vessel on any tide. The unloading boom swings through an arc of 180 degrees, which is more than ample to work across any hatch of any ship.

While the bulk of the cargo is removed by means of the larger noz-



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The model shown above is the CHJ-class AY. Yoke Bracket — either tack welded or bolted in position — allows dual flexibility for shafts.

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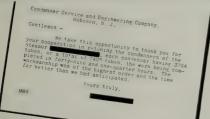
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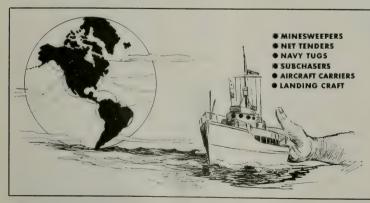
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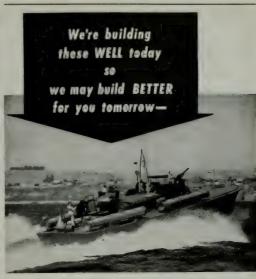
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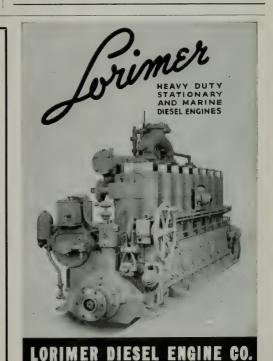
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Basing most of his remarks on United States Steel records, Mr. King gave credit for the increased efficiency of present-day blast furnaces to improved methods of charging materials, air blowing, blast heating, gas cleaning, as well as better iron and slag handling systems which have made it possible to operate larger furnaces.

Actual figures show that the average blast furnace production per day in 1918 was 340 net tons, while today it is well over 700, he said. Similarly, the largest furnace in existence in World War I produced approximately 630 net tons per day while a number of units are now consistently producing 1500 tons daily.

Another contributing factor to high production is the longer life of furnaces between linings. In 1918 the average furnace produced approximately 625,000 tons before relining, but now this figure has risen to 1,800,000 tons, and in some cases records of as high as 3,000,000 tons have been obtained.

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proved, and by present standards is considered a representative modern unit. Today the furnaces are tapping 169 net ton heats, or 58 per cent larger, producing \$10 net tons per day per furnace, or 60 per cent more, and consuming \$700,000 Btu per net ton of ingots, or 44 per cent less.

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